Vrije Universiteit Brussel

Essays on strategic fiscal policy in Flemish municipalities

Dissertation presented to the
Vrije Universiteit Brussel
in partial fulfilment of the requirements for the degree of
Doctor in Applied Economic Sciences by

Stijn Goeminne

Vrije Universiteit Brussel
Faculty of Economics, Social and Political Sciences
and the Solvay Business School

Prof. dr. B. Heyndels, supervisor
Prof. dr. C. Smolders, co-supervisor

HOGESCHOOL GENT
LID VAN DE ASSOCIATIE UNIVERSITEIT GENT

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Acknowledgements

Four years ago, this dissertation was nothing more than a figment of my imagination. Now it is a reality. Although my name is on its front page, this study earns more than one reference. Therefore I would like to start by registering my gratitude to several people.

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General introduction

This dissertation consists of four empirical essays on fiscal policy making in local governments. We focus on the tax rate and tax policy choices made by incumbent politicians, who we assume act as opportunistic agents hoping to stay in office after the next elections. As such we rely on standard public choice models, which, contrary to normative welfare theory, do not depict politicians as benevolent governors. Public Choice Theory views governmental decisions as the product of interest group politics which do not necessarily maximize the community's prosperity. Starting from this assumption, it makes sense to explain tax-setting policies by reference to variables indicating aspects of the local political setting, the political background of those in power, the year in the election cycle and the strength of the party to which a politician belongs.

Besides opportunistic behavior, Public Choice models recognize that politicians are not unfamiliar to strategic interaction (Kraan, 1996). "The concept of strategic interaction refers to the fact that […] decision-makers are usually cooperating in small groups, so that each individual vote has a noticeable effect on collective outcomes. Consequently, each actor is able to anticipate the reactions of other actors to their own choices" (Kraan, 1996; 5). Persson & Svensson (1989) and Alesina & Tabellini (1990) apply such anticipating behavior to fiscal policy when introducing strategic debt models. Their models show that deficits and debts are instruments of strategic fiscal policy. Theories of strategic debt try to answer questions such as whether a government runs fiscal deficits when it knows that its successor's choice of public spending will be influenced by the level of inherited public debt, or whether incumbent policy makers run higher budget deficits than they otherwise would if they are certain to be re-elected. The idea of the strategic use of debt is that governments expecting to lose the next elections consciously create deficits and increase government debt in order to reduce the possibilities of the next government.

Empirical research shows the relevance of Public Choice models for Flemish local fiscal policy making. Political variables such as partisanship and fragmentation characteristics exhibit a significant impact on the tax variables studied in most of the research (e.g. Geys, 2007). Political budget cycles also appear to exist in the context of Flemish municipalities (e.g. Vermeir & Heyndels, 2006). There is also evidence of tax mimicking (e.g. Heyndels & Vuchelen, 1998), fiscal illusion effects (e.g. Heyndels & Smolders, 1994 & 1995) and flypaper effects (e.g. Bastiaens *et al.* 2001 and Heyndels & Van Driessche, 2002).

This dissertation contributes to the field firstly by integrating previous models. Second, it applies models of the strategic use of debt. Do expectations of electoral defeat incite incumbents to change fiscal policy in a way that reduces their successors' scope for policy making? The dissertation both tests the seminal strategic debt models on Flemish municipalities and also attempts to find evidence of strategic motivations in the formation of pre-electoral tax rate policy and the budgeting of tax revenues.

The outline of this dissertation is the following. Chapter 1 familiarizes the reader with the Flemish local fiscal and political context, as well as with the results of previous empirical research on Flemish municipalities.

The research question addressed in Chapter 2 is whether or not a government's constitution, fiscal interaction dynamics, political budget cycles and fiscal illusion are of importance when setting the rates of the two most important Flemish local taxes. First, as in most of the empirical contributions, tax rate determinants are regrouped and these groups of variables are tested one by one on a panel data set. Second, we contribute to the literature by testing the simultaneous impact of these groups of variables.

Given our special interest in strategic fiscal policy making, Chapter 3 overviews the literature on strategic deficit and debt and tests whether or not Flemish local governments' debt policies are in line with the predictions of the seminal papers by Persson & Svensson (1989) and Alesina & Tabellini (1990).

We continue building on the theory of strategic debt in chapters 4 and 5. In chapter 4 we focus on tax rate policy in the years immediately before elections. Traditionally, tax rate reductions at such times are attributed to the incumbents' opportunistic motivations. Reducing tax rates, it is assumed, should increase the government's popularity and increase its chances of re-election. However, such cuts could also be explained by strategic motivations. It may be the case that a government expects to be voted out of office regardless of the policy followed. In that case, it may also reduce tax rates from a strategic point of view. To be able to discriminate between opportunistic and strategic motivations for local tax rate cuts, we introduce the variable of a government's electoral expectations when explaining pre-electoral tax rate changes. It is argued that the decision to change tax rates is influenced by the expected vote percentage for the governing party (or parties).

In chapter 5 we apply strategic debt models to explain why the level of revenues collected by a government during the fiscal year may deviate from that projected in its budget. Chapter 5 analyses whether differences in government fragmentation are useful in explaining tax revenue forecast errors. We assume that fragmented governments are more optimistic about future revenues compared to one party governments, as they are on average less certain of staying in power (Ashworth *et al.*, 2006). Next to the strategic use of debt models, the Weak Government Hypothesis (Roubini & Sachs, 1989a,b) and the War of Attrition idea (Alesina & Drazen, 1991) support the contention that fragmented governments could be more optimistic about future revenues.

Chapters 2, 3, 4 and 5 contain empirical analyses. The hypotheses are tested in different kinds of models found on an extensive dataset providing a wide range of information on Flemish local governments. Initially fiscal policy research was cross-section based, while recent papers almost all build on panel data estimations. In line with this evolution, empirical analyses are panel based. Chapter 2 contains a 3 Stages Least Squares analysis of the local tax rate determinants. In chapter 3 a 2 Stages Least Squares approach is introduced to estimate the local government's electoral expectations. Chapter 3 continues with an Ordinary Least Squares analysis to test the strategic debt hypothesis. In chapter 4

we apply the Seemingly Unrelated Regression method to explain pre-electoral tax rate changes. In Chapter 5 we implement Generalized Method of Moments estimators to explain the differences in budgeted and realized tax receipts.

Finally, some remarks on the establishment and valorisation of this dissertation. First, we mention that this dissertation results from the compilation of four empirical papers that have been written over the past four years. Chapters 2, 3, 4 and 5 at hand were developed each with their own focus and are presented before as self-contained papers at various academic conferences and workshops.[1] In a sence, this dissertation "on papers" can be seen as a forced attempt to bring these papers together in one neat unit. The most logical presentation of the empirical analyses was in reverse order, with the strategic debt models as connection thread through chapters 3, 4 and 5. The reverse realisation might create inconsistency, still we tried to reduce it to an absolute minimum. Second, the paper that presents the analysis of Chapter 5 has recently been published in International Tax & Public Finance, a peer-reviewed journal on theoretical and empirical aspects of tax policy.[2] Chapter 3 is submitted for the B.E. Journal of Economic Policy & Analysis, a peer-reviewed journal that aims to publish submissions that employ microeconomics to analyze issues in business, consumer behavior, and public policy. We only recently received the confirmation that a revised version of this chapter will be most probably published in the next few months. Both journals are indexed in the Social Science Citation Index.

1 For an overview of the presentations, see p. 215.

2 Goeminne, S., Geys, B. & Smolders, C., 2008, Political fragmentation and projected tax revenues: evidence from Flemish municipalities, International Tax & Public Finance 15(3), 297-315.

Chapter 1 : Flemish municipalities

Flemish municipalities are the subject of all empirical analyses in this work. This first chapter is intended to make the reader familiar with Flemish municipalities. To understand local governments' tax policy, one should be informed about the political (section 1.1) and fiscal (section 1.2) context. As this dissertation is not the first empirical work on Flemish local fiscal policy, we give a brief overview of previous empirical tax and fiscal policy research in Flemish municipalities in section 1.3. Finally, in section 1.4 it is shown why the dataset of Flemish governments is popular in political economy research.

1.1 Institutional and political context

Through a series of state reforms over the past three decades, Belgium has become a federalised country in which municipalities constitute the lowest tier of government.[3] The start of the state reform process goes back to 1970, when a revision of the Constitution resulted in the setting-up of the three cultural communities. Although the powers of these communities were initially limited, this revision laid the foundations for the establishment of three Regions with economic autonomy in 1980. As the state reforms continued, local government also became a matter for the regions. The Lambermont Accord made Flemish municipalities dependent on the Flemish Region. Of 589 Belgian municipalities, 308 are under the supervision of the Flemish government. Local governments have wide-ranging autonomy, as article 162 of the Belgian Constitution proclaims. This article basically states that municipal councils are authorised to pursue any policy that promotes the interests of their inhabitants and therefore have the legitimization to take any initiative that is not prohibited explicitly by central legislation (Vanneste, 2002).

In the sections below we illustrate the institutional context of Flemish local governments and discuss some of their political characteristics.

[3] Except for the municipality of Antwerp where districts are the lowest government level.

1.1.1 Institutional context

Flemish local governments have a parliamentary system consisting of the local Council (the legislative body) and the College of Mayor and Alderman (the executive body). The local Council has 7 to 55 members, depending on the number of the municipality's inhabitants. Seats in the Council are allocated using a system of proportional representation, in which each party is allocated a certain number of seats in proportion to the votes it obtains in the elections. The College has 2 to 10 members and is elected from the members of the Council. The composition of the College is determined by the party (or parties) holding a majority position in the Council. They appoint the aldermen and propose a mayor from among their councillors (the mayor is then officially appointed by the Flemish Minister of Home Affairs). Local power thus rests in the hands of the parties holding a majority position in the local council. We should also note that a multi-party College reflects the absence of a clear majority for any one party in the council (unlike in, for example, Norway, where the College reflects seats in the council (cf. Tovmo, 2007).[4] This is important as it implies that –in most cases– all parties in the College are responsible for the decision-making process (since they are needed to reach the majority position in the council necessary to pass legislation). The College is in charge of the everyday administration of the municipality.

Elections are held every 6 years on the second Sunday of October.[5] As a result of these, new governments are formed by the party or the parties that can command a majority in the Council. The new governments take office from January 1st following the elections. Incumbents can be re-elected without restrictions (i.e. there are no binding term limits). This is not unimportant for this dissertation, as research shows that incumbents who can run for re-election are more sensitive to strategic fiscal policy, which is in the end not

[4] In some limited instances, a party with a clear majority nonetheless decides to form a coalition. This is usually driven by the consideration that the majority position is too tight –e.g. no absolute majority or just one seat above it. (Ackaert, 1996 and Buelens & Deschouwer, 2001).

[5] The most recent elections were in 2006.

surprising as the reason to act strategically is to get into office again.[6] It should also be noted that the proportional representation system stimulates strategic fiscal policy as it leads to a diverse political landscape, both ideologically and in terms of fragmentation.

1.1.2 Government fragmentation

Proportional representation tends to generate more fragmented political landscapes. Generally, the number of parties competing in elections and participating in government is larger in proportional representation systems than under plurality rule (Duverger, 1954).[7] Table 1 shows that Flemish local governments exhibit a considerable degree of fragmentation. Therefore, the effect of government fragmentation on Flemish local fiscal policy will be tested in all empirical analyses of this dissertation.

Table 1 Size of College of Mayor and Alderman in Flanders (N=308)

	1989-1994	1995-2000	2001-2006
1 party	140 45.5%	120 39.0%	96 31.2%
2 parties	136 44.8%	149 48.4%	162 52.6%
3 parties	27 8.8%	31 10.1%	43 14.0%
+ 3 parties	5 1.6%	8 2.6%	7 2.3%
Average number of parties	1.67	1.77	1.87

Source : Ashworth *et al.* (2005, 400)

[6] See Bordignon *et al.* (2003), who show that tax mimicking is present in Italian municipalities only when mayors have electoral concerns, while mayors facing a binding term limit do not appear to be affected by their neighbours' policies. They conclude by stating that the auto-correlation in tax rates is likely to be driven by strategic considerations rather than by spatially auto-correlated shocks. See also Case (1993) and Besley & Case (1995a & 1995b) for an analysis of the impact of term limits on US state governors' policies.

[7] According to Duverger (1954) political systems based on proportional representation tend to maintain multiparty systems, while simple majority systems result in a two-party system. The general idea is that the number of parties is positively correlated with the proportionality of the electoral system.

From Table 1 it can be seen that, in each legislative period, more than 80% of the Flemish municipalities have had one or two parties in government. However, the incidence of single party governments decreases over the period examined while the opposite is true for two-party coalitions. In addition, the number of coalitions with at least 3 parties shows that the level of political fragmentation has been increasing over the period 1989-2006. Indeed, their number have risen from 32 in the 1989-1994 periods to 50 after the municipal elections of 2000. Over the entire period, the average number of parties in the College has increased from 1.67 to 1.87.

In Table 1 the degree of government fragmentation is presented in the most easiest way, that is the number of parties that are in the government. Still, this measure of government fragmentation is insensitive to the relative size of the parties that are in power. However, the role of size inequalities cannot be denied. Suppose a coalition government with three parties, each represented by three members in the College of Mayor and Alderman. Then think of also a government with three parties and nine members in the College, but here one party is represented by six members, a second party by two and the third party by only one member. It's obvious that both governments are three party coalitions with nine members of the College, while the power of each party is different in the two presented compositions. Therefore we could take into account size inequalities to pay attention to the importance of the various parties in the decision process. In empirical specifications on Flemish local fiscal policy –see e.g. Ashworth *et al.* (2005 & 2006)– the Effective Number Of Parties (Laakso & Taagepera, 1979) is often employed. This fragmentation measure is based on the Herfindahl-Hirschmann concentration index. In fact, the effective number of parties index is its inverse and is calculated as following :

$$\text{Effective number of parties} = \frac{1}{\sum_{i=1}^{n} p_i^2}$$

with n = the number of parties in the government

p_i = party i's chare in the total number of seats

Lower concentrations result in higher values and represent increases of the fragmentation. By definition, the effective number of government parties cannot exceed the actual number of government parties. When all parties of the government have equal seats in the College, the effective number of parties equals the actual number of parties. Size inequalities result in values of effective number of parties that are lower than the effective number of parties.

When in the next chapters of this dissertation the impact of fragmentation is tested, the variable NPAR refers to the simple count of government parties, while ENPAR represents the effective number of parties index as presented above. When introducing NPAR or ENPAR, only a linear impact of fragmentation on the dependent variable is tested. As research on local fiscal policy in Flemish municipalities before indicates that fragmentation can have a non-linear impact too –see Ashworth *et al.* (2005 & 2006) and Geys (2007) and Goeminne *et al.* (2008)– we also combine NPAR or ENPAR with its squared terms. Another operationalisation to test for non-linearities is the introduction of dummy variables TWOPAR and LARGEPAR for governments consisting of, respectively two and at least three parties –with single party governments as the remaining category.

1.1.3 Ideology

It is not only the constitution of the government which influences, through its level of fragmentation, fiscal policy. This policy is also guided by the government's ideological characteristics. The ideological diversification of Flemish local governments is studied by Deschouwer (1996) and Rihoux (2001), who position the main parties on a left-right scale. Local party representatives were asked to position their party on a left-right axis, with 0 representing extreme left and 10 representing extreme right, which resulted in the ideological positions as shown in Table 2.

Table 2 Ideological positions of Flemish parties

General name	Previous name	Current name	1989-1994	1995-2000	2001-2006
Ecologists	Agalev	Groen!	2.9	2.6	2.6
Socialists	SP	SP.a	2.8	2.7	2.8
Nationalists	VU	-	5.1	4.7	5.0
Local parties			5.0	5.0	4.5
Christian Democrats	CVP	CD&V	5.1	5.3	5.3
Liberals	PVV	VLD	5.6	6.1	6.0
Extreme right	Vlaams Blok	Vlaams Belang	-	8.9	8.7

Source : Deschouwer (1996) & Rihoux (2001)

The first column of this table indicates that parties with a local name –indicated as "local parties"– are distinguished from parties that face the voter with a label formed nationally (Ecologists, Socialists, Nationalists, Christian Democrats, Liberals, Extreme right), including the connotations this might bring about in the electoral mind of voters. *Parties with a local name*, as e.g. the "list of the mayor", have no references to parties operating at higher government levels and are often formed around local political personalities or issues. Local parties may attract voters and candidates of different ideologies, especially in the case of cartel lists – that are cooperations between two or more (local and/or national) lists. Steyvers *et al.* (2007) show that in the period 1976-2000 about three quarter of all municipalities had at least one local party in the municipal party system. Ackaert (2006) shows that for the same period local parties get the support of approximately one fifth of the voters. *Parties with a national label* are expected to mirror national ideological differences, political programmes and practices. Indeed, Deschouwer (1996) presents evidence of a nationalisation of local elections in terms of national party presence, but also reveals divergence among branches of the same party as it comes to structure, organisation, programme and electoral themes.

Table 2 shows that Christian Democrats, Nationalists and local parties are at the centre. The Ecologists and the Socialists are at the left of the centre, while the Liberals are at the right of the centre. The anti-immigrant party Vlaams Blok/Vlaams Belang is at the extreme right of the spectrum. It is noteworthy that due to the "cordon sanitaire" this party participates in none of the Flemish local governments.[8]

[8] The "cordon sanitaire" is a formal agreement by all the other parties that they will never talk to the Vlaams Belang, neither they will form a government coalition with it at any level of government.

Some of the national parties changed their name during the years under review. In 1992, the PVV (Partij voor Vrijheid en Vooruitgang) changed its name to VLD (Vlaamse Liberalen en Democraten). In 2001 the VU (Volksunie) split as a result of internal tensions into two parties : NVA (Nieuw Vlaamse Alliantie), center right nationalist and SPIRIT, center left nationalist. Also in 2001 the CVP (Christelijke Volkspartij) and SP (Socialistische Partij) decided to change their names to, respectively, CD&V (Christen-Democratisch & Vlaams) and SP.a (Socialistische Partij Anders). Since 2003, the previously named AGALEV (Anders gaan leven) has gone by the name of GROEN!

Table 3 Ideological complexion of municipal governments

	1989-1994	1995-2000	2001-2006
Minimum	2.8	2.7	2.8
Maximum	5.6	6.1	6.0
Average	4.8	5.0	4.9

Source: MICE, based on Deschouwer (1996) & Rihoux (2001)

However, policy is made by the local government as a whole, which is different from that of individual parties because many municipalities are governed by coalition governments (see Table 1 on p. 15). Ideological diversity is thus moderated. Table 3 presents the average ideological complexion of local governments as constructed by Kontopoulos & Perotti (1999).[9] Their Ideological Complexion of the Government (ICG) index is a weighted average of the ideological scores, where the weight is the relative number of mayor or aldermen of a certain party in the government. ICG ranges from 2.7 to 6.1, with an average of 4.9 over the three legislatures under review. The ideological differences in governments are important determinants in fiscal policy as theories on partisan politics have shown (see Tufte, 1978). Therefore all analyses in this dissertation test for the impact of the government's ideology.[10]

[9] ICG is used previously in research on Flemish municipalities by Ashworth *et al.* (2006) and Geys (2007).

[10] Vermeir & Heyndels (2006) do not take ideology into account when estimating a vote-function. We add ideology to the analysis, but find no significant effect (see footnote 79 on p. 95). Although the final estimation (IX.) in chapter 5 on p. 160 does not contain ideological variables, they were tested in preliminary estimations (see footnote 141 on p. 164).

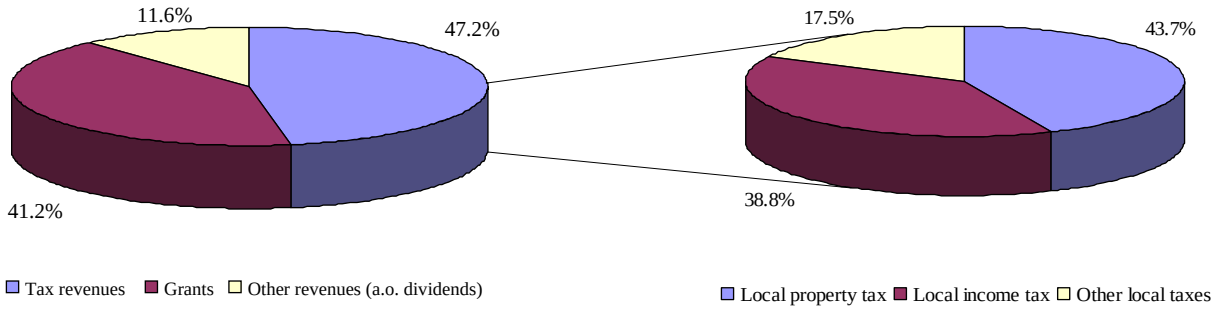
1.2 Fiscal context

Local governments have wide-ranging budgetary and fiscal autonomy. They are authorized to decide independently on the level and the structure of revenues and expenditures. This paragraph first looks at revenues of Flemish municipalities, with special interests in tax revenue (1.2.1), then overviews their expenditures (1.2.2) and debt (1.2.3) and finally outlines the budgetary process (1.2.4).

1.2.1 Revenues

On the revenues side, three major resources can be distinguished. Figure 1 (left diagram) shows that taxation, grants from higher levels of government (which are for the most part unconditional) and "other revenues" –in which dividends from municipal associations are dominant– are the most important sources of revenues.

Figure 1 Structure of Flemish local revenues (left diagram) and Flemish local tax revenues (right diagram), in percentages of total (tax) revenues, 2006



Source : Dexia, 2007; 5

Taxation generates a little less than half of the Flemish municipalities' revenues (47.2%). The diagram at the right of Figure 1 shows the composition of tax revenues. Over four fifths of this tax income derives from local income and local property tax. Local property tax (LPT) generates 43.7% of the tax revenues, while local income tax (LIT) represents 38.8%. Both taxes are single rate surcharge taxes on the federal income tax and the regional property tax respectively. Higher governments define both tax bases while the local Councils are free to set the tax rate (including 0). The tax revenues are collected by the Flemish/federal government who transfer it to the local governments.

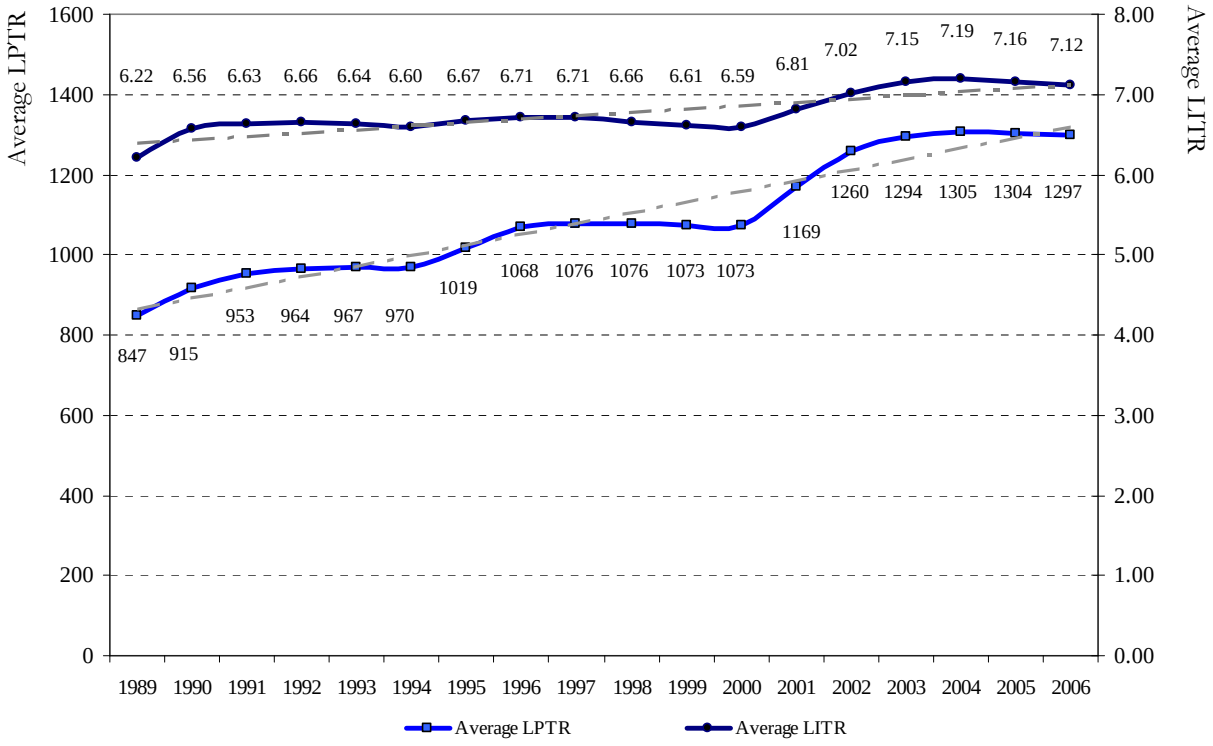
The federal government's income tax base is the comprehensive income of the taxpayer. The local income tax rate is set by the municipality as a percentage of the tax due by the taxpayer to the federal authority. A local tax rate of 1% logically means that local authority receives 1% on top of the tax a taxpayer pays to the federal government. Local income tax is automatically collected by means of advance tax payments. In 2006, the local income tax rate varied between 0% and 9% (on average 7.12% in 2006). The local share of tax revenue is thus only a fraction of the federal income tax on which it is based.

Regional government's property tax base is the assessed net rental value (cadastral income), which is the imputed income from the property that the taxpayer owns. This income is calculated by the tax department on the basis of objective criteria such as area and year of construction. Property taxes are levied by an assessment notice. Taxpayers pay property taxes to the Regional government, which transfers the local tax money to the local governments. Local property tax rates are expressed as a number of hundredths –or centimes– of the regional tax rate. A local government tax rate of 100 centimes equals the amount due to the regional government. The average local property tax rate in 2006 was 1297, the minimum tax rate being 600 and the maximum 2250. The local share in property tax revenue is thus on average 13 times larger than the regional share.

We should remark that there is a difference in the definition of "taxpayer" given the tax rate that is studied. The local income tax is a residence based tax with households as tax payers. The local property tax is a source based tax with the house-owner as tax payer. Important to mention is that companies too are subject to the local property tax. In the period 1991-2004, in Flanders 40% of property tax revenues came from legal persons while 60% came from natural persons (VOKA, 2005).

Figure 2 shows the evolution of the average local property tax rates (LPTR) and the average local income tax rates (LITR) in Flemish municipalities in the period 1989-2006. LPTR corresponds with the left axis, while LITR is on the right axis. This figure show that average local tax rates show a slight upward trend (see dotted lines) over the period.

Figure 2 Average LPTR (left axis), LITR (right axis) and linear trend lines (dotted lines) in Flemish municipalities, 1989-2006, N=308



Source : VVSG

Local income and local property taxes are the subject of the analyses in chapter 2 and chapter 4. Municipalities also collect local taxes for which they themselves set the tax base as well as the tax rate. Those taxes are the subject of the analysis in chapter 5. The average Flemish municipality collects about 15 of such taxes. However, most of these taxes are rather small in terms of revenue. Across all Flemish municipalities there are over 120 different local taxes currently in use. They include taxes on private swimming pools, green taxes, taxes on advertising boards, taxes on camping grounds, taxes on the use of public domain, taxes on parking,… This multitude of different taxes is the most visible consequence of the Flemish municipalities' fiscal autonomy.

As in most decentralised countries, local governments in Flanders depend heavily on higher levels of government for their revenue. Figure 1 on p. 20 shows that grants from higher governments are almost equal in importance to taxation in local governments' revenues. Grants (which are for the most part unconditional) account for 41.2% of all revenue. Most of the grant revenue comes from the "Gemeentefonds", which is in the care of the Regional governments.

Other revenues –of which dividends from municipal associations and charges and user fees are the most important– are minor revenue sources for local governments, amounting to 11.69% of the total.

1.2.2 Expenditures

Local expenditures can be reported using an economic or a functional classification (see Table 4). The economic classification distinguishes four categories of expenditures, of which the cost of personnel is the most important. Operating costs and debt servicing –the interest and capital payments that stem from local debt– present a budget share of about 15% each. In 2006 over a quarter of the budget was allocated to transfers to inter- and intra-local government authorities such as public centres for social welfare, police departments, church fabrics and intermunicipal agencies. The largest part of the budget – about 41%– is assigned to personnel costs. This is not surprising as the most important services provided at municipal level, such as education and public administration, are very labour intensive services. This is clear from the functional classification of the expenditures.

Table 4 Average municipal expenditure shares (budgets 2006)

Economic classification		Functional classification	
Personnel & operating costs	41.1%	Education	30.5%
		Public administration	27.5%
Transfers	27.0%	Culture	11.6%
		Roads	10.9%
Operating costs	17.9%	Social services	5.8%
		Public safety	5.7%
Debt service	14.0%	Urban development	4.8%
		Others	3.2%
Total	100%	Total	100%

Source : Dexia, 2007

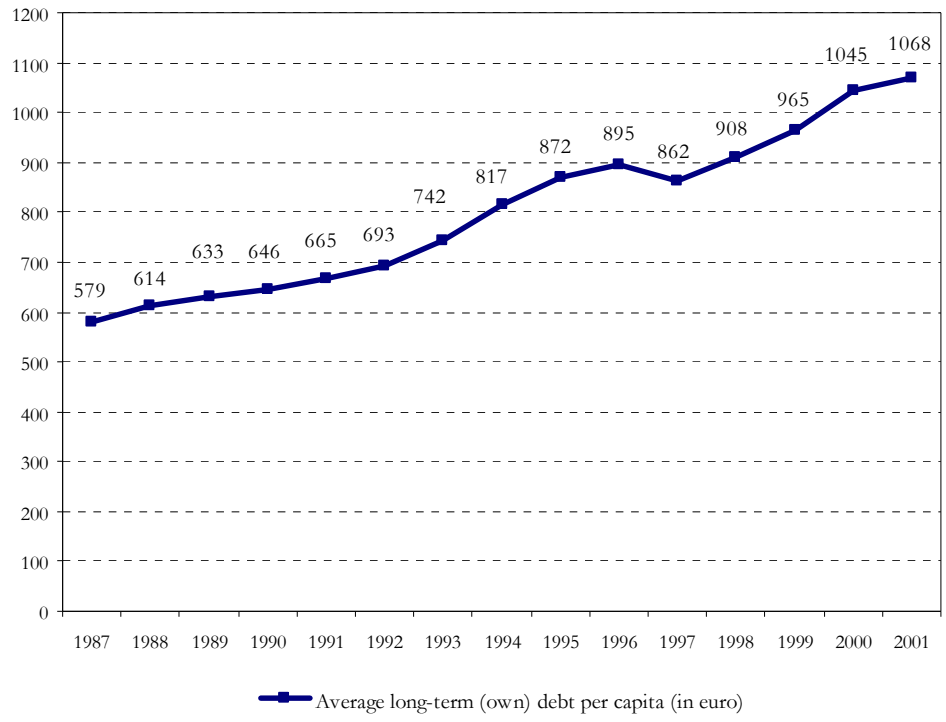
1.2.3 Debt

Broadly speaking, local public debt consists of all types of debt for which a local government is the debtor and thus for which it is responsible for the debt service, that is the reimbursement of the capital and the interest payments (Vanneste, 2002).[11] Even though they can arrange public loans, local governments almost exclusively borrow from banks. Four fifths of local debt is contracted at the long-term to finance investments (Dexia, 2007). Local governments can also make short-term debt to solve temporary problems of liquidity. Chapter 3 concentrates on long-term debt changes as dependent variable, while in the empirical analyses of chapter 2 and chapter 4 long-term debt will be used as control variable. This long-term debt approach follows Geys (2004) who states that long-term debt can be used as an indicator for a municipality's budgetary stress. Short-term loans may only be an indication of temporary imbalances. Still the existence of long-term debt is not bad by definition. Indeed, loans are an important instrument to spread the costs of an investment over its lifetime. Finally, the long-term debt data-set we dispose of only takes into account debt for which the financial burden falls completely on the local government. Local governments' debt they contract for third parties (e.g. public centres for social welfare), for which local governments pass through debt service to these third parties are not taken into account. This is because such loans have no impact on the municipality's indebtedness (Geys, 2004).

[11] Higher governments can subsidise a part of the yearly debt service through a specific grant. This is the case for (only) 1.4% of local public debt (Dexia, 2007).

Relatively, local public debt is about 5% of the total public debt (in terms of government debt under the Maastricht Treaty). In relation to GNP, local public debt is a little less then 5%. On the balance sheet of local governments, local public debt represents about one quarter of the liabilities. Given that local governments are responsible for about half of total public investments, these levels of local public debt are more than acceptable (Dexia, 2008). The level of long-term (own) debt in Flemish municipalities and its evolution over the period 1987-2001 is shown in Figure 3.[12]

Figure 3 Average long-term (own) debt per capita (in euro), 1987-2001, N=296[13]



Source : MICE, VUB

[12] This period corresponds largely with the period for which debt per capita is used in the empirical analyses.

[13] We are grateful to Benny Geys for sharing his data-set. In this data-set 10 municipalities are removed due to incomplete data-series. Moreover, Antwerp and Ghent were removed as they obtained sizeable reorganisation loans from the federal 'hulpfonds tot financieel herstel van de gemeenten' during the mid-1980s. This leaves us 296 Flemish municipalities. Also debt variables introduced in the next chapters of this dissertation result from this data-set.

Figure 3 shows that the average long-term (own) debt per capita was 1068 euro in 2001 and that the level of debt presents an upward trend over the period under review. The reduction in 1997 was induced by the stock exchange introduction of Dexia Belgium shares in 1996. Local governments, the most important shareholders of Gemeentekrediet[14], used the yield of the exceptional dividend to reduce debt. Strongest increases are in election years 1994 (10.1%) and 2000 (8.3%).

1.2.4 Budgeting process

In Belgium the fiscal year runs parallel to the calendar year (from 1 January to 31 December). Prior to each fiscal year, the municipality must prepare a budget. This is important as no other expenditures but those ratified in the budget can actually take place (with minor exceptions in specific circumstances). In general, the first steps in the preparation of the budget are taken after the summer recess in August or September. Each local authority's financial department then sets up a budget in order to match the municipality's administrative and political objectives. This draft is based on the individual budgets brought forward by the various Alderman and is discussed by the College of Mayor and Alderman. The overall budget proposal that results from these discussions is then brought before the local Council for ratification and local tax rates can be decided. Only the budget and tax rates endorsed before 31 December can be executed. If local politicians do not reach agreement on the following year's budget, and so tax rates are not approved by the Council prior to this date, the local government has no legal grounds to levy the taxes and a specific regulation comes into force with the previous year's budget as a guideline. Following the fiscal year, the annual account is drawn up.

[14] Dexia, called "Gemeentekrediet" before its stock exchange introduction, is a public credit institution devoted to financing the local public sector.

The precise role of the various actors involved in this budgeting process cannot easily be put into general terms. Legally, there is only the stipulation that the presentation of the budget is a responsibility of the College. In practice, this does not necessarily mean that the College also sets up the budget. Indeed, in most –if not all– cases the College is supported by the finance department of the municipality. Its role is nonetheless vague and highly dependent on the characteristics of the local finance department (such as size and experience), the alderman responsible for the municipal finances and their mutual cooperation. These relations and the relative impact of the various actors, however, tend to differ across municipalities.

1.3 Research on Flemish local fiscal policy

Different models of fiscal policy-making decisions have been tested before on Flemish municipalities. Most of the research investigates whether different political, economic or demographic variables explain budgetary variables. Rather than a dry enumeration of research papers and their results, findings are assembled for some different theoretical models in the public choice literature, such as partisan politics, the weak government hypothesis, tax interaction models, the electoral cycle models and fiscal illusion. In the next chapter we will test these models on Flemish local tax rate policy. This section overviews the literature on Flemish local fiscal policy-making decisions. In Table A3 in appendix on p. 199 research on fiscal policy in Flemish and Belgian municipalities is listed, while in this section the focus is on the findings of the research on a Flemish dataset.[15]

Flemish local fiscal policy-making has been tested for the impact of ideological differences. Hibbs (1977) introduced the idea that ideological differences may play an important role in shaping public policy. In general leftist governments are expected to accept higher expenditures which have an effect on tax and debt policy. Studies on fiscal policy in Flemish municipalities show that fiscal policy is not strongly ideologically driven. Ashworth

[15] Table A3 on p. 199 is structured in line with the hypotheses formulated in Chapter 2 when explaining the local income and local property tax rates.

et al. (2005) look for evidence whether leftist parties are willing to furnish higher levels of debt but are unable to find a significant impact of ideology.[16] Geys (2007) finds only weak evidence that right-wing governments provide a higher growth rate of local public debt. Testing tax innovation determinants, Ashworth *et al.* (2006) find that, in accordance with the theoretical expectations, leftist governments are more likely to set new taxes. Ashworth & Heyndels (2000b) research politicians' opinions concerning the local tax burden and find that left-wing politicians are more likely than right-wing politicians to classify a given tax burden as low. When local politicians are asked how they prefer to increase tax revenues, right-wing politicians prefer to increase income taxes, while left-wing politicians opt for raising property taxes (Ashworth & Heyndels, 2000a). Ashworth & Heyndels (1997) find no significant impact of ideology on the attitude of incumbents towards a given tax rate.

It is not surprising that Geys (2007) finds effects of fragmentation on pre-electoral local debt policy. Table 1 on p. 15 shows that Flemish local governments exhibit a considerable degree of fragmentation, which inspired several scholars to test Roubini & Sachs' (1989a, b) Weak Government Hypothesis (WGH) on Flemish local governments. This hypothesis states that weaker –i.e. more fragmented– governments tend to follow less restrictive fiscal policies leading to higher levels of expenditures as well as higher debts and deficits. Ashworth & Heyndels (2005) figure out how political fragmentation affects local Flemish governments' reactions at the event of a major reform of the grant system. Their results reveal that under positive budgetary shocks –e.g. when grant revenue increases– fragmented governments spend more of the additional money, while spending is cut less under negative shocks –when grant revenues decrease. Ashworth *et al.* (2006) investigate the adoption of a (green) tax and find that coalitions are more likely to adopt this tax than single-party governments. However, this result is driven by the smaller (two-party) coalitions. Overall, they conclude that the greater the level of fragmentation of the municipal government, the lower the likelihood that a new tax will be set. Ashworth *et al.* (2005) analyse the effect of political fragmentation on local public debt. They cannot affirm that fragmentation significantly affects local public indebtedness in the long run. The

[16] A higher debt level for leftist governments would result from the fact that the higher level of spending of leftist parties is not sufficiently compensated for by increased revenue generation.

number of parties does not affect the optimal level of local debt. Nevertheless, they find that fragmented governments experience difficulties in decision-making when confronted with an exogenous shock. In the short run, fragmented governments are less able to respond to such shocks. It takes more time to attain their optimal long-term level of public debt, which proves the existence of short-term effects of government fragmentation on indebtedness. Goeminne *et al.* (2008) analyse whether government fragmentation affects tax revenue forecast errors and find that governments with at least three parties are significantly more careful in their tax revenue projections than single- or two-party governments. Finally, we refer to Vermeir & Heyndels (2006) who analyse Flemish municipal elections during the period 1982 to 2000. They provide evidence that the number of parties in government has a positive effect on the vote.

The yardstick competition theory assumes that incumbents mimic the tax-setting policy of neighbouring governments because they expect voters to use the fiscal policy of a neighbouring government as a yardstick to evaluate the fiscal policy of their own government when deciding whether or not to re-elect the incumbent government (Besley & Case, 1995a). Yardstick competition behavior was often tested in Flemish local governments. Vermeir & Heyndels (2006) confirm its existence in their vote-function model. They show that incumbents are punished for higher tax rates and that the electoral punishment depends on tax rates in neighbouring municipalities. Ashworth *et al.* (2006) also endorse the yardstick competition hypothesis as they find evidence that adoption of a new tax is more likely when neighbouring municipalities have already introduced a similar tax. Ashworth & Heyndels (1997) analyse the politicians' opinions concerning local tax rates. They find that political opposition to the local property tax rate is negatively related to the level of the tax rate in neighbouring municipalities. For local income tax rates, there is no significant effect. Ashworth & Heyndels (2000a & 2000b) agree that the higher the neighbouring tax burden or tax rate, the lower is political opposition to a given tax burden or tax rate.[17]

[17] Heyndels & Vuchelen (1998), Richard *et al.* (2005) and Van Parys & Verbeke (2007) provide evidence of interaction effects. Their analyses are based on a Belgian dataset.

Whether or not governments change their policy at election time is the central focus of electoral cycle models (Rogoff, 1990). The role of elections in fiscal policy is studied more profoundly in the theory of political budget cycles. There is a lot of empirical evidence to support the idea that incumbents, motivated by their chances of re-election, lower taxes, increase expenditures or raise grants before elections (Franzese, 2002 and Drazen, 2000). Flemish local governments' fiscal policy also seems to be influenced by the time period to the next elections. As Ashworth *et al.* (2006) show, the further in time from an election, the more likely it is that a green tax will be installed. The electoral cycle is also found in the research of Ashworth *et al.* (2005), who find that Flemish local governments present first debt decreases after elections and then debt increases when elections are imminent. Increasing debt before elections could be the result of increasing expenditures and/or lowering taxation to attract voters. Geys (2007) relates the electoral cycle to fragmentation theory (see infra). This paper points to the level of government fragmentation as an intermediary factor in opportunistic political behavior. Using changes in debt growth as the dependent variable, the results suggest that the election-driven rise in debt growth rates is indeed affected by the fragmentation level of the government.

Fiscal illusion theory has also been tested in Flemish municipalities. Fiscal illusion refers to features of the tax system that affect taxpayers' tax burden perceptions and thereby cause them to underestimate how much tax they truly pay for government-provided goods (Gemmell *et al.*, 2002). The literature describes different types of fiscal illusion, of which Heyndels & Smolders (1994) empirically confirm two.[18] They find support for the tax complexity and flypaper effect hypotheses, while they are unable to confirm the renter illusion and income-elasticity hypotheses. Ashworth & Heyndels (1997 & 2000b) find no significant evidence of fiscal illusion when investigating the politician's opinions of the local property tax rate or local tax burden. Evidence of the flypaper effect in the Flemish local context can be found in Bastiaens *et al.* (2001), Heyndels (2001) and Heyndels & Van Driessche (1998). Bastiaens *et al.* (2001) study the effect of local debt and unconditional

[18] See section 2.3.5 on p. 45 for a more detailed discussion of the different types of fiscal illusion.

grants on local expenditure and tax policy. Heyndels (2001) looks for evidence of asymmetries in flypaper effects in Flemish municipalities. He finds that an increase in grants leads to additional spending, while a decrease in grants leaves the level of spending unaffected and is compensated for through additional taxation. Heyndels & Van Driessche (1998) analyse the responses of Flemish municipalities to budgetary windfalls of grants and tax revenue in order to empirically test the mental accounting model.

1.4 Dataset

The previous section shows that this work is not the first to test the different fiscal policy decision-making hypotheses on a dataset of Flemish municipalities. Ashworth *et al.* (2005) mention that, although country-level data dominate in the literature, a local-level context offers a number of advantages.

First of all, municipalities have a homogeneous institutional context. Flemish municipalities share common political and constitutional systems, experience common economic shocks, employ similar budgetary processes and have identical electoral rules. Moreover, voter preferences are believed to be reasonably homogeneous across municipalities. Unlike studies using country data, we are able to control for institutional aspects and economic conditions that have been found in the literature to play an important role in determining fiscal policy choices. This allows us to concentrate on the crucial explanatory variables without the need to search for ways of controlling for the other variables.

Second, Flemish municipalities have a parliamentary system which makes the results of analyses comparable to studies that have tested similar models on national levels.

Third, when analysing local property tax and/or local income tax (changes), as in chapters 2 and 4, there are some additional advantages, as both taxes are surcharge taxes on, respectively, a regional and federal tax. All municipalities have the same definition of the tax base since these are determined at a higher level. This is an advantage from an empirical point of view as we can focus on tax rate(s) (changes) without having to adjust for tax base

differences. Especially within the context of this dissertation, where strategic fiscal policy is central, the use of local property and/or local income tax is appropriate. It encourages both incumbents and inhabitants to make intermunicipal comparisons to strategically formulate or evaluate local fiscal policy respectively.

A final advantage of a local data-set is related to the number of cross-sections. Municipal data allow testing models with a much larger number of observations, up to 308 in the Flemish context. Therefore, some authors like Van Parys & Verbeke (2007), Richard *et al.* (2005) and Heyndels & Vuchelen (1998) use Belgian municipal data. We only rely on fiscal data of Flemish municipalities. As Geys (2004) mentions, there are not only important political differences between Flanders, Brussels and Wallonia that would introduce numerous additional complexities; it is also difficult to find municipal data that are uniform over the different regions.

The sources of the data are presented in appendix when providing descriptive statistics on the used variables.[19]

[19] We refer to Table A1 on p. 195, Table A7 on p. 205, Table A10 on p. 207, Table A14 on p. 210 and Table A18 on p. 213.

Chapter 2 : Tax rate determinants

In general this dissertation focuses on fiscal policy in Flemish municipalities. More specifically in this chapter we study the tax rates of local income and local property taxes because they generate a quite significant amount of revenues for local governments. Though several scholars have tested the impact of fiscal illusion, electoral cycles, partisan and fragmentation effects on these Flemish local tax rates before, we look for effects of these variables using an extended dataset. Additionally we enter the groups of variables simultaneously.

2.1 Introduction

The way in which a government determines its tax rates and why policymakers change them has been studied before.

Tax smoothing theory states that an efficient government fixes tax rates in a way that minimizes the costs of taxation over time. Consequently, governments will not adjust tax rates to temporary changes in expenditures or revenues and the planned tax rate is expected to be constant over time. Barro (1979) exploited this theory to explain the existence of surpluses and deficits.[20]

However, empirical evidence (e.g. Strazicich, 1997) shows that tax rates are not constant over time and refutes tax smoothing theory. Governments do change tax rates and various motivations have been suggested. Hettich & Winer (1988, 1999) provide a theoretical framework on tax choices. They conclude that "tax systems can be viewed as the outcome of optimizing political and economic behavior" (Hettich & Winer, 1988; 711).

[20] Tax smoothing in Barro's (1979) model implies that the (overall) tax rate behaves as a random walk and the tax rate is a non stationary time series with a unit root.

The role of economic behavior was already present in standard Keynesian models that imply that fiscal policy is countercyclical to the business cycle. Economic and socio-demographic conditions thus can be expected to induce tax rate changes (Chari *et al.*, 1994). The impact of the choices of politicians concerning tax policy has been widely studied. In general the Hettich & Winer (1984, 1988, 1999) model assumes that the maximization of support for the government is the main objective when outlining fiscal policy. The probability of an individual voting for the governing party depends positively on the public services provided and negatively on the income loss of the individual due to taxation.

Both the level of public services and the tax policy differ according to the partisan characteristics of the government. Theories on partisan politics attribute central importance to the ideological differences between groups within society and the parties that represent these groups (Tufte, 1978). Next to partisan influences, other theories point to politically inspired determinants of tax rates. The political budget cycle theory points to the impact of the timing of elections on tax rates (Franzese, 2002). Fragmentation and tax interaction theories show that, respectively, the composition of the government (Ricciuti, 2004) and the fiscal policy of neighbouring jurisdictions (Besley & Case, 1995a) frame tax policy as well. Finally, illusionary effects may explain the level of tax rates. Fiscal illusion refers to features of the tax system that result in an underestimation of the taxpayers' tax burden or the tax price for the provision of public goods (Buchanan, 1967).

The number of surveys that empirically investigate any one of the above determinants is impressive. Focusing on one feature permits a more detailed analysis of each individual determinant, but leaves the question unanswered how they are mutually related. The question whether tax rate determinants –that may explain tax rates when tested individually– also explain tax rates significantly when they are tested jointly remains empirically unanswered. Does one determinant interact with others? The purpose of this chapter is not only to test individual theories, but also to test a model that takes into account these theories mutually, which has –as far as we know– not been attempted before. Although it is impossible to capture all tax rate determinants in a model, this chapter

contributes to the existing literature in bringing together the most commonly cited political explanations for tax rates. In this chapter, we explain the local income tax rate and the local property tax rate on a dataset of Flemish municipalities.

The remainder of this chapter is structured as follows. Section 2.2 elucidates its focus and provides some contributions to the existing research. Section 2.3 reviews the literature on individual tax rate determinants and formulates some hypotheses. The empirical analysis is clarified in section 2.4, while the main findings are summarized in section 2.5.

2.2 Discussion

Attention to individual fiscal policy determinants has grown gradually. The concept of fiscal illusion was introduced by Puviani as early as 1903 but empirical literature on fiscal illusion has its origin in the mid 1970s with Oates' (1975) test of the elasticity hypothesis.[21] Also at that time Nordhaus (1975) popularized the political business cycle theory by stating that politicians attempt to create the most desirable economic conditions immediately before elections, knowing that costly policy adjustments are required after them.[22] Shortly after, Hibbs (1977), followed by Tufte (1978), introduced the idea that the ideological differences of parties may play an important role in shaping public policy. Frey & Schneider (1978a & 1978b) believe that ideological motives marks the chosen policy, but only early on in the legislative term. Opportunistic motivations tend to take the upper hand when elections are imminent. Since the mid 1980s, starting with Zodrow & Mieszkowski (1986) and Wilson (1986), there has been an outpouring of academic research on tax competition, building on Oates' (1972) attempt to understand the potential efficiency problems associated with competition for capital by local governments. At the end of the 1980s, Roubini & Sachs (1989a & 1989b) introduced the idea that public policy is also affected by the level of

[21] In later years, Wagner (1976) introduced the Herfindahl concentration index to measure for complexity of the tax structure. At the end of the 1970s, Courant *et al.* (1979) and Oates (1979) introduced the flypaper effect as a case of fiscal illusion. Martinez-Vasquez (1983) was the first to explicitly focus on renter illusion.

[22] See section 4.2.1 on p. 125 for more references to the political business cycle literature.

government fragmentation. Ever since these seminal papers, each individual model has been intensively tested empirically on different types of datasets. This chapter contributes to this enormous literature by testing the theories jointly.

Whereas most of the papers focus on tax revenues or tax rates defined as tax revenues as a share of GDP, we choose to adopt the tax rate in the sense of "tariff" as dependent variable.[23] However, tax revenues information may be a less accurate reflection of elected officials' intentions, as taxes paid may also reflect economic conditions of which the politician was unaware. We are convinced that for the panel of Flemish local authorities it is more convenient to explain tax rates –in the meaning of "tariffs". The taxes under investigation are surcharge taxes whose precise rates the governments have to set, while the tax bases are based on the same legislation. This is an advantage from an empirical point of view.[24]

Another contribution to the empirical research on tax rate determinants is the local context in which we test our hypotheses. Research on the determinants of tax rates at the municipal level is not that widespread. To the best of our knowledge only Allers & Elhorst (2005), Bastiaens *et al.* (2001), Bordignon *et al.* (2003), Brett & Pinkse (2000), Brueckner & Saavedra (2001), Buettner (2001), Heyndels & Vuchelen (1998), Leprince *et al.* (2007), Richard *et al.* (2005), Solé Ollé (2003) and Van Parys & Verbeke (2007) investigate tax rate determinants at the local level. Tax rate determinants at higher government levels on the contrary have been examined extensively.[25]

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[23] Indeed, tax rates defined as *tax revenues as a share of GDP* are more common. Bizer & Durlauf (1990) demonstrate that average tax rates follow a pattern consistent with a political tax cycle and van der Ploeg (1989) shows that a government cuts the tax rate towards election eve in order to gain votes. Some studies rely on *tax revenues*. Poterba (1994) finds tax increases to be significantly smaller in election years than at other times. Yoo (1998) shows that Japanese tax revenues decrease by a statistically significant amount in the year immediately before elections to the House of Representatives.

[24] See section 1.4 on p. 31.

[25] Only some of the authors that examined tax rate determinants at higher government levels are Besley & Case (1995a), Besley & Rosen (1998), Case (1993), Esteller-Moré & Solé Ollé (2001), Feld & Reulier (2005), Goodspeed (2000), Hayashi & Boadway (2001), Hernández-Murillo (2003), Rork (2003) and Strazicich (2001).

Finally, we further narrow the focus of the analysis by giving specific attention to local *inhabitant* taxes. Ashworth & Heyndels (2000b) assume that politicians, being members of the majority in Flemish municipalities, try to maximize votes (in line with the Hettich & Winer tax structure model, see below) and show that local Flemish incumbents are sensitive to tax policy changes that have an impact on voters. Vermeir & Heyndels (2006) provide evidence that incumbents of Flemish municipalities are electorally punished for higher tax rates. Therefore references to the empirical literature of tax rate determinants will focus on studies of *local inhabitant taxes*. We refer to Table A2 in appendix on p. 196, where an overview is provided of previous papers that have studied *local inhabitant tax rates*.[26] Whether or not our findings corroborate the existing literature is best assessed when referring to research on local inhabitant taxes. This should increase the comparability of our findings.[27]

2.3 The literature on tax rate determinants

Basically, tax systems embrace three components: tax rates, tax bases and special provisions, such as exemptions, credits and deductions. Our analyses explain simultaneously the local income tax rate and the local property tax rate of the Flemish municipalities. We focus on political forces, while economic forces are introduced in the analyses as control variables. This is in line with the Hettich & Winer tax structure model (Hettich & Winer, 1984, 1988, 1999).

[26] To maximize comparability, in Table A2 papers are already ordered in line with the order in which hypotheses are presented in the next session. For this reason, papers that have tested more than one hypothesis appear several times.

[27] We are aware that, as well as inhabitant taxes, local governments may also levy business taxes. Bordignon *et al.* (2003), Buettner (2001), Brett & Pinkse (2000), Leprince *et al.* (2007), for example, examine local *business* tax rate determinants. But references to research on business taxes in the next section are restricted to a minimum.

2.3.1 The Hettich & Winer tax structure model

The Hettich & Winer tax structure model, henceforth the "HW model", explains fiscal choices and fiscal policies as equilibrium outcomes of a collective choice process that is constrained by political as well as economic forces. According to the HW model, tax policies and tax systems are the result of democratic choices. Traditionally the incentive and incidence effects of taxation and the implications of these effects on the efficient allocation of resources are the concerns of public finance. Besides this traditional concern, the HW model assigns an explicit role to the political process in analysing fiscal policy. It states that "a full understanding of taxation also requires [the] examination of the process by which tax structure is determined" (Hettich & Winer, 1999; 2). The HW model starts from a probabilistic voting model. The main assumptions of the model is that governments wish to maximize expected voter support across a heterogeneous electorate and that voters may or may not have complete information (Hettich & Winer, 1999; 25). Policy makers are no longer seen as benevolent social planners, but as self-interested politicians.

According to the HW model, when going to the polls a voter i (with i=1,…,N number of voters) will evaluate on the one hand the benefits (b_i) derived from the level of public goods and services provided (G) and on the other hand the loss in full income of the individual due to taxation needed to finance public output.[28] The HW model assumes that tax revenue (T_i) depends on the tax rate (t_i) and the level of taxable activity (B_i). Then the government has to choose the level of public expenditure (G) and tax rate t_i so as to reduce the opposition to taxation (c_i) and to maximize voter support

$$\sum_{i=1}^{N} \{\, b_i(G) - c_i(t_i * B_i) \,\},$$

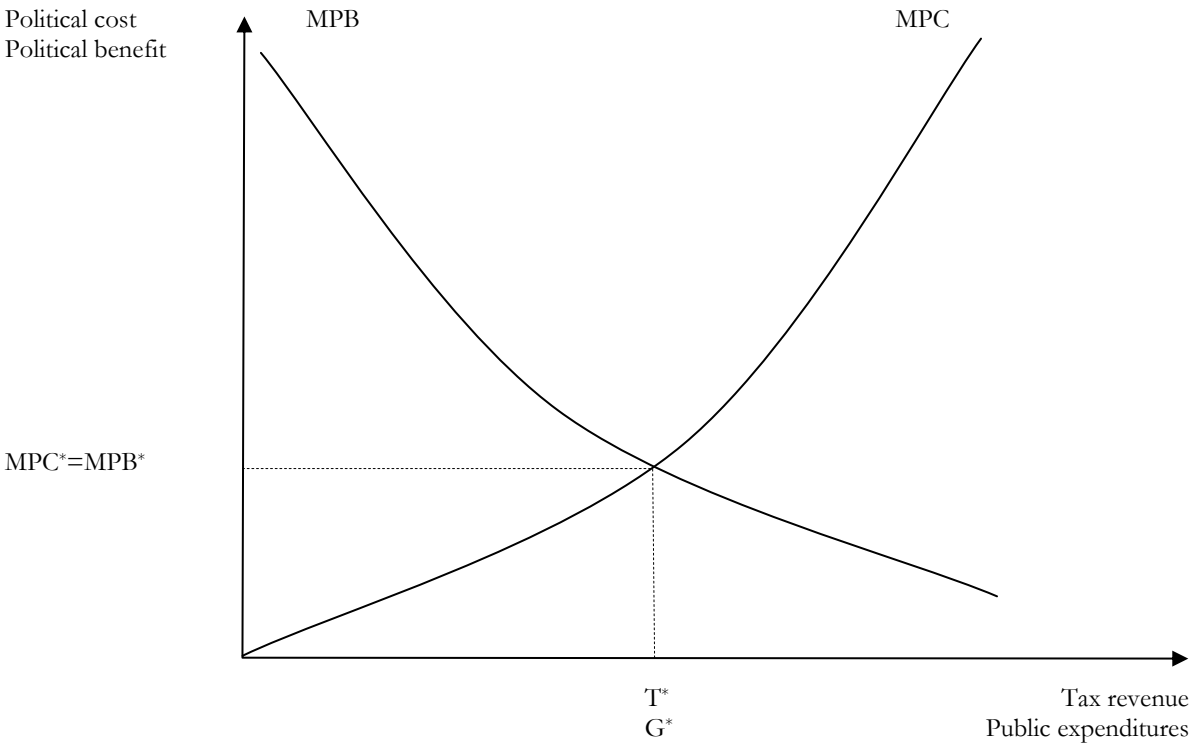
subject to the government budget constraint

$$G - \sum_{i=1}^{N} t_i * B_i = 0,$$

[28] The loss in full income also depends on the deadweight loss or welfare cost of taxation (d_i). Hettich & Winer (1988) assume that d_i=0.

and subject to the taxpayers' responses to taxation. It is obvious that the benefits –that is the level of public goods and services– will positively affect and the loss in income –due tot taxation– negatively affect the probability of an individual voting for the government. The governments' problem thus is to choose that level of taxation T_i and that level of public goods (G) so that the expected voter support is maximized. The level of taxation (and of public expenditures) that corresponds with maximized voter support can be graphically deduced from Figure 4.

Figure 4 Taxation when maximizing vote support



Assume that a government has to decide on the amount of public goods to be provided (G) and on the tax revenue (T_i) in order to collect the required budget. Politicians know that an increase of public expenditures increases voter support, while the opposite is expected for higher taxation. If this loss of support is seen as political costs, a political cost function can be created. Figure 4 presents the marginal political cost curve (MPC) representing marginal political costs (or the number of votes a government loses) of raising tax revenues. The marginal political benefit curve (MPB) reflects the electoral benefits obtained from an increase of public expenditures. MPC has a positive slope indicating that an increase of the tax revenues increases the political costs. The convexity of MPC explains

that the political cost increases progressively. The MPB has a negative slope to indicate that the marginal benefits from increasing public expenditures decrease with the level of government spending. A government optimizing the voter support will set taxation when the electoral cost of taxation equals the marginal benefit from government spending, thus at the level T* in Figure 4, corresponding to a level of t* given the tax base. In theory, a government aiming to maximize voter support should vary t* among taxpayers on a given tax base. Individual tax rates t* lead to the largest total vote support. However, a suchlike individual approach would increase administrative costs. Therefore in practice, taxpayers are grouped or all pay the same tax rate.

Summarized, the HW model introduced self-interested politicians that aim to maximize voter support. The role of politics in the determination of tax policy thus should be taken into account when examining fiscal policy. Hettich & Winer (2002) themselves suggest some of these political determinants. They e.g. explicitly refer to the role of elections, the role of governance and the structural features of revenue systems. Therefore in the following of this chapter we focus on political forces that may explain the level of taxation. In the next sections 2.3.2 to 2.3.5 we review the literature on political tax rate determinants and formulate a number of testable hypotheses concerning the factors, ceteris paribus, affecting local tax rate policy.[29] We should point to the fact that in this section, voters are the driving force while in the next sections governments are the driving force. Still both approaches are linked. E.g. left-wing governments face lower marginal political costs and choose higher optimal levels of public goods. Most of the variables tested in the next sections 2.3.2 to 2.3.5 have been tested before in research on fiscal policy in Flemish or Belgian municipalities as listed in Table A3 on p. 199.[30] Most of the results are already introduced in section 1.3 on p. 27, in the introduction to fiscal policy research in Flemish municipalities.

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[29] When referring to empirical evidence in the following sections, we focus on the literature on *local inhabitant tax rates* as summarized in Table A2 in appendix on p. 196.

[30] The scope of research of the papers in Table A3 is wider than that of this chapter as we focus on tax rates solely. Papers are ordered according the hypotheses presented in the next section.

2.3.2 Composition of the government

A large literature has examined whether the composition of the government affects fiscal policy. Mostly partisan or fragmentation characteristics have been the subjects of research, but the power of the government –mostly measured by an electoral margin variable– has also been studied. Is fiscal policy different when the government is left-wing or right-wing, when it is fragmented or not or when its electoral margin is low or high? The fiscal policy literature suggests it is and shows that the government's characteristics play a role in forming fiscal policy.

Partisan characteristics measure for the impact of ideological differences on policy outputs. Imbeau *et al.* (2001) explicitly state that "changes in the left-right party composition of a government are hypothesized to be related to changes in policy".[31] Fiscal policy theory believes that left-wing governments are more in favour of income redistribution and an active state than right-wing governments. This may lead to higher public expenditures (Hibbs, 1977 and Schmidt, 1996) resulting in higher tax rates. Leftist governments are thus expected to have a positive effect on tax rates, while the opposite is true for rightist governments. At the local level, the partisan hypothesis is confirmed by Solé Ollé (2003) in an investigation of the relation between tax mimicking and electoral accountability in Spanish municipalities. As a result we may hypothesize that:

H_1 : Leftist governments impose higher tax rates

Other scholars suggest that more fragmented (or divided) governments increase public spending –which is reflected in a higher tax burden– because several conflicting political objectives have to be accommodated. This idea originates from The Weak Government Hypothesis (Roubini & Sachs, 1989a,b), which states that weaker –i.e. more fragmented– governments tend to follow less restrictive fiscal policies (for recent evidence see Ricciuti,

[31] See Imbeau *et al.* (2001) for an overview of mainstream studies on partisan influences on policy outcome.

2004 and Borge, 2005; for a review see Ashworth *et al.*, 2005). Fragmentation thus leads to higher levels of expenditure (see e.g. Volkerink & de Haan, 2001 and Ricciuti, 2004) as a result of which we can expect higher tax rates. Therefore we suggest that:

H_2 : More fragmented governments levy higher tax rates

However, these theoretical expectations are not always confirmed by empirical research on local inhabitant tax rates. Solé Ollé (2003) shows that Spanish local coalition governments do not tax more heavily than single party governments.

Finally, the power of a government may explain tax policy. Since Frey & Schneider (1978a), it is well-established that budgetary policy is affected by the incumbents' electoral margin. The higher the electoral margin of the government, the less needs to engage in opportunistic fiscal behavior because it is relatively confident of re-election, regardless of its tax setting behavior. It thus does not have to care much about the loss of votes resulting from high tax rates. Solé Ollé (2003) and Allers & Elhorst (2005) show that fiscal policy depends on the electoral margin in Spanish and Dutch municipalities respectively. We hypothesize that:

H_3 : Governments with a large majority impose higher tax rates

2.3.3 Spatial tax interaction

Fiscal policy decisions of a government may be influenced by the fiscal policy decisions of neighbouring jurisdictions as a result of yardstick competition.[32] Traditionally, the fiscal policy literature discerns two types of yardstick competition : tax mimicking and tax competition.

[32] See Brueckner (2003) and Revelli (2005) for an overview of empirical models of strategic interaction that give rise to a spatial pattern in local government expenditures and revenues.

Tax mimicking theory shows that incumbents are likely to mimic the tax-setting of neighbouring governments. This is because voters are expected to use the fiscal policy of a neighbouring government as a yardstick to evaluate that of their own government when deciding whether or not to re-elect the incumbent government (Besley & Case, 1995a). Heyndels & Vuchelen (1998) present empirical evidence that in Belgian municipalities both local income and local property tax rates are influenced by the tax rate policies of neighbouring municipalities. Although the response to the rates of neighbouring municipalities only occurs slowly, Richard *et al.* (2005) support the idea of tax mimicking of local income and local property tax rates in Belgian municipalities. Allers & Elhorst (2005) and Solé Ollé (2003) bring forward evidence of tax mimicking behavior in Dutch and Spanish municipalities respectively.

Tax competition theory suggests that the mobility of the tax base leads governments to adopt lower tax rates in order to attract part of the tax base from other jurisdictions (Zodrow & Mieszkowski, 1986).[33] This competition can lead to tax rates that are low enough to result in the underprovision of public goods. This evolution is known in the literature as the "race to the bottom".[34] Although tax competition is well described in the literature (see Wilson, 1999), empirical evidence at the municipal level is scarce. We can only refer to Van Parys & Verbeke (2007), who show evidence of tax competition in Belgian municipalities, and to Brueckner & Saavedra (2001) who find similar empirical evidence among cities in the Boston metropolitan area.[35]

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33 Of course if the tax base is immobile, as for property taxes, lowering tax rates may have motivations other than attracting tax base from other jurisdistions (see tax mimicking).

34 Tax rates in Flemish municipalities do not appear to present a "race to the bottom". Average tax rates show a slight upward trend (as can be seen in Figure 2 on p. 22). This, however, need not imply that tax competition between Flemish municipalities is absent. Competition might keep rates lower than they would have been without tax competition.

35 Feld & Kirchgässner (2001) use income tax rates as exploratory variables to show that citizens of a sample of 137 Swiss cities choose their place of residence according to fiscal incentives.

The theory of yardstick competition suggest that fiscal policy may be influenced by that of the neighbouring jurisdictions, so we hypothesize that:

H_4 : Tax rates interact with neighbouring tax rates

2.3.4 Elections

Whether or not governments change their policy at elections is the central focus of electoral cycle models. To name some, Bizer & Durlauf (1990), Poterba (1994) and Tufte (1978) provide evidence from different countries –and differing time periods– that politicians manipulate tax levels for electoral purposes. They support the idea that lowering taxes –but also increasing expenditures or raising grants– before elections raises the government's chances of re-election. The existence of political budget cycles at the local level is shown by e.g. Ashworth *et al.* (2005 & 2006), Binet & Pentecôte (2004), Brender (2003), Drazen & Eslava (2005), Geys (2007) and Veiga & Veiga (2007)[36]. The idea of the political budget cycles is supported by the literature on vote and popularity functions. Vote-functions explain the vote (or the change in the vote) for the government at elections through (the change in) economic, political, but also tax variables (Nannestad & Paldam, 1994). The theoretical expectation is that tax rate reductions (increases) or the abolition (introduction) of (new) taxes increase (decrease) the popularity of the government. Vermeir & Heyndels (2006) provide evidence that in Flemish municipalities lower tax rates do indeed have a positive impact on electoral outcomes. Political budget cycle and vote-

[36] Ashworth *et al.* (2005) find that Flemish local governments present first debt decreases after elections and then debt increases when elections are imminent. Ashworth *et al.* (2006) show that the further in time from an election, the more likely it is that Flemish governments installs a green tax. Binet & Pentecôte (2004) show that election-motivated tax manipulation in French municipalities can be achieved by tax rate cuts. Brender (2003) shows that the fiscal performance of Israeli mayors substantially affected their re-election probabilities in the 1998 campaign, but not in the 1989 and 1993 campaigns. Drazen & Eslava (2005) find a pre-electoral increase in targeted expenditures combined with a contraction of other types of expenditures in Colombian municipalities in the period 1987-2000. Geys (2007) finds that in election years debt growth rates increase with the number of parties in the College of Mayor and Aldermen in 294 Flemish municipalities over the period 1977-2000. Solé Ollé (2003) finds that in 105 Spanish municipalities in the surroundings of Barcelona tax increases occur in post-election years in the period 1991-1999. Veiga & Veiga (2007) find that expenditures of Portuguese municipalities over the 1979-2000 period increased in pre-election periods, especially on items that are highly visible to the electorate (e.g., highways and streets).

function studies thus endorse the statement that election moments play an explanatory role in governments' policies. We therefore test hypothesis 5:

H_5 : Tax rates increase in post-election years and decrease when elections are near

2.3.5 Fiscal illusion

Fiscal illusion refers to a systematically biased perception of fiscal parameters and is based on the misperception of the cost of government by voters. This misperception is influenced by the way the government raises revenues. Fiscal illusion allows the government to raise taxes while minimizing voters' resistance. The literature discerns various types of fiscal illusion. First, the *flypaper effect* (or *grant illusion*) refers to the phenomenon whereby the expenditure stimulus from unconditional grants exceeds that from an equivalent increase in the electorate's private income (Courant *et al.*, 1979). A second source of fiscal illusion is related to the *elasticity of tax receipts* and stresses the difference between discretionary and automatic tax increases (Oates, 1975). Tax income growth due to the automatic responsiveness of the tax system to changes in economic activity remains invisible for the taxpayer, while changes in fiscal revenue due to a political action are highly visible. Higher levels of expenditure will be the result of automatic tax increases of which the political costs will be minimized. A third type of fiscal illusion can be found in the *complexity of the tax structure*. It may be difficult for voters to know the total amount of taxes paid when the tax structure is complex. Numerous small taxes rather than a few significant ones make it difficult for the taxpayer to identify the cost of government and thus may create illusionary effects (Heyndels & Smolders, 1994). Finally, *renter illusion* exists when local taxation is significantly property based. Most property tax systems tax property owners, not occupants, so that only property owners are likely to perceive correctly the local tax-price. Renters underestimate their true tax price as they forget that (a part of) the property tax is shifted to them through the rent they pay. This explains why renters accept more easily higher levels of local expenditure (Blom-Hansen, 2005).

Evidence of fiscal illusion at the local level which explains *levels of expenditure* is present. Dollery & Worthington (1999), Gemmell *et al.* (2002), Heyndels & Smolders (1994) and Pommerehne & Schneider (1978) suggest the existence of illusionary effects in Australian, British, Flemish and Swiss municipalities respectively. Winter & Mouritzen (2001) find evidence for fiscal illusion in Odense, a Danish city. These authors investigated "full" fiscal illusion models, while others look for evidence of only one of the four sources of fiscal illusion. Their studies are thus similar to those of Barnett *et al.* (1991) and Heyndels (2001), who discuss flypaper effects at the municipal level. Renter illusion at the local level is empirically tested by, among others, Bergstrom & Goodman (1973), Beck (1984) and Blom-Hansen (2005), while DiLorenzo (1982) tests the elasticity of tax receipts. For research on the complexity of the tax structure we can refer to Heyndels & Smolders (1995).

As this overview shows, fiscal illusion models are used to explain higher expenditure levels. Fiscal illusion can also be used as an explanation for the *level of tax rates*, as Bastiaens *et al.* (2001) confirm. Therefore we expect higher tax rates when fiscal illusion is present and formulate the following (sub-)hypotheses taken into account the different types of fiscal illusion :

$H_{6.1}$: The presence of grant illusion positively affects tax rates

$H_{6.2}$: The elasticity of the tax receipts positively affects the tax rates

$H_{6.3}$: The more complex the tax structure, the higher the tax rates

$H_{6.4}$: The presence of renter illusion positively affects tax rates

2.4 Empirical analysis

To empirically test the hypotheses formulated in the previous section, we use a dataset of 308 Flemish municipalities for the period 1990-2001. Section 2.4.1 introduces our dependent variables. Section 2.4.2 provides a detailed account of the model's specification and the measurement of our variables. Section 2.4.3 presents the methodology and empirical results.

2.4.1 Dependent variables

The dependent variables of the analysis, LITR and LPTR, represent the *l*ocal *i*ncome *t*ax *r*ate and the *l*ocal *p*roperty *t*ax *r*ate. We refer to section 1.2.1 starting on p. 20 for more details on local income and local property taxes.

2.4.2 Empirical model

We estimate the following system of equations (I.) to test our hypotheses (subscripts i and t referring to municipalities and time respectively):

$$
\begin{aligned}
\text{(I.)} \quad LITR_{it} = {} & \alpha_1 + \alpha_2\, POL_{it-1} + \alpha_3\, INTER_{it} + \alpha_4\, TBE_{it} + \alpha_5\, ILLUS_{it} + \alpha_6\, LPTR_{it} \\
& + \alpha_7\, DEMO_{it-1} + \alpha_8\, TBASE_{it-1} + \alpha_9\, TDEP_{it-1} + \alpha_{10}\, DEBT_{it-1} \\
& + \alpha_{11}\, TREND_t + u_{it} \\
LPTR_{it} = {} & \beta_1 + \beta_2\, POL_{it-1} + \beta_3\, INTER_{it} + \beta_4\, TBE_{it} + \beta_5\, ILLUS_{it} + \beta_6\, LITR_{it} \\
& + \beta_7\, DEMO_{it-1} + \beta_8\, TBASE_{it-1} + \beta_9\, TDEP_{it-1} + \beta_{10}\, DEBT_{it-1} \\
& + \beta_{11}\, TREND_t + v_{it}
\end{aligned}
$$

The dependent variables LITR and LPTR represent the local income tax rate and the local property tax rate.

POL is a vector of political variables, containing partisan and fragmentation characteristics, as well as a variable taking into account the political strength of the government.[37]

To test H_1, that is the impact of partisan characteristics on the local tax rates, we introduce the Ideological Complexion of the Government (ICG) index as developed by Kontopoulos & Perotti (1999) and used previously in research on Flemish municipalities by Ashworth *et al.* (2006) and Geys (2007). ICG takes into account the ideological position of the government and positions the government on a left-right scale with 0 representing extreme left and 10 representing extreme right.[38] As we hypothesized that leftist governments levy higher tax rates, the expected value of ICG is negative.

H_2 stated that fragmented governments are expected to levy higher tax rates. Different operationalisations to test the impact of fragmentation on the tax rates are tested. First we add the number of parties of the current government ($NPAR_{it-1}$) to measure the effect of fragmentation. Ashworth *et al.* (2005 & 2006), Geys (2007) and Goeminne *et al.* (2008) have previously found a non-linear effect of government fragmentation on local government's fiscal decision-making. Consequently, we then test a non linear specification, adding a squared term of $NPAR_{it-1}$. We also take into account size inequalities to pay attention to the importance of the various parties in the decision process and therefore introduce alternatively the effective number of government parties ($ENPAR_{it-1}$) as employed by Ashworth *et al.* (2005 & 2006) before. Again we also introduce its squared term to test possible non-linearities. Another operationalisation to test for non-linearities is the introduction of dummy variables $TWOPAR_{it-1}$ and $LARGEPAR_{it-1}$ for governments consisting of, respectively two and at least three parties –with single party governments as the remaining category.

[37] All political variables are fixed over the legislature and measured at the time of the previous elections.

[38] For more information on the calculation of ICG see section 1.1.3 on p. 19.

The seats margin (SEATMAR) is taken into account to measure the strength of the government. It is computed as the difference between the percentage of the seats of the government parties in the Council and 50%.[39] H_3 predicts that tax rates increase with SEATMAR, thus a positive value is expected.

INTER is a vector of spatial tax interaction variables. Like Ashworth & Heyndels (1997), Heyndels & Vuchelen (1998), Van Parys & Verbeke (2007) and Vermeir & Heyndels (2006) the average tax rates of the neighbouring jurisdictions (LITRN and LPTRN) are added to the model to test H_4.[40]. Both the empirical literature on tax mimicking and that on tax competition (e.g. Heyndels & Vuchelen, 1998; Brueckner & Saavedra, 2001 and Van Parys & Verbeke, 2007) use the average tax rates of neighbouring municipalities to measure for the existence of tax mimicking or tax competition. This implies that it will be impracticable to distinguish between the tax mimic and tax competition effect, or thus we look for evidence of yardstick competition.[41] Traditionally yardstick competition theories test whether a policy instrument of a jurisdiction is significantly affected by the same policy instrument in competing jurisdictions, a so-called "within policy interaction". Nevertheless, a "cross policy interaction" is possible. This occurs when a jurisdiction reacts to a tax rate change of (one of) its neighbours by changing another tax rate. Van Parys & Verbeke (2007) show that tax instruments in Belgian municipalities should indeed be considered together. Their analysis indicates that Belgian local property (income) tax rates not only depend on those of their neighbours, but also on their income (property) tax rates. Therefore we add both LITRN and LPTRN in both tax rate regressions.

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39 While Ashworth *et al.* (2005) & (2006) use the number of seats in excess of majority, we take into account the percentage of seats above 50% to control for the size of the Council.

40 We calculate unweighted averages. For Flemish municipalities across the language boundary, only Flemish neighbours are taken into account. As it has no Flemish neighbours, Voeren is removed from the dataset when testing interaction effects.

41 Brueckner (2003) shows that the reaction functions to test each interaction model separately have the same form, so that it is extremely difficult (if not impossible) to empirically verify which model is appropriate.

Whether or not the time to next elections has an impact on local tax rates will be measured by TBE. This variable takes into account the time before elections in years and has value 5 in post-election years, 4 in the second year after the election and so on to end with value 0 in the election year. This technique has been used by Ashworth *et al.* (2005 & 2006) to find evidence of an electoral cycle in research on fiscal policy in Flemish municipalities. For our purpose, the idea is that local politicians, motivated by their chances of re-election, lower taxation before elections. As Ashworth *et al.* (2006) find non-linearities in the electoral cycle when analysing local public debt, we introduce both TBE and its squared term.[42]

To empirically test the fiscal illusion hypotheses, we introduce ILLUS, a vector of fiscal illusion variables. Different types of fiscal illusion are introduced in section 2.3.5. In this chapter we test three of them.

First we test for the presence of a possible flypaper effect. As in Bastiaens *et al.* (2001), GRANT is defined as the unconditional grants per capita to capture a possible flypaper effect. As higher grants may obscure the real tax price of public goods, it may have a positive impact on the demand for public goods and thus on tax rates (to finance this increased demand). The presence of a flypaper effect should result in a positive value for GRANT.

Second, we take into account the elasticity of the tax receipts by the variable TEL. Similar to Heyndels & Smolders (1994), we introduce the proportion of total tax revenue generated by the local income tax to capture a possible elasticity effect. TEL thus is calculated as (income tax revenues/total tax revenues). When no income taxes are levied, TEL has value 0. When only income taxes are levied, TEL has value 1. We prefer the proportion of local income tax revenue to that of local property tax revenue to construct TEL as the tax base

[42] An alternative method to confirm econometrically the existence of tax rate cycles could be to introduce a vector of five dummy variables, each for the number of years to the next election year. Bischoff (2004) uses this method to search for electoral cycles when analysing the accuracy of the tax projections of the German states. Results of this alternative method (not shown) are highly comparable to the results presented in Table 10. As Ashworth *et al.* (2005 & 2006) also apply the TBE approach on a dataset of Flemish municipalities, we present the TBE approach for reasons of comparability.

of LITR is responsive to changes in economy, while this is not true for the tax base of LPTR. The assessed net rental value (cadastral income) nor the Flemish regional tax rate has changed, so the tax base of LPTR was stable over the period under review. Should the elasticity of the tax receipts cause fiscal illusion, then we expect a positive value for TEL. More elastic tax revenues should increase spending and again this could have a positive impact on tax rates.

Third, the complexity of the tax structure is measured by HHI. Following Wagner (1976) the Hirschman-Herfindahl Index (HHI) is frequently used to measure the complexity of a jurisdiction's tax structure, as in, for example, Bastiaens *et al.* (2001), Dollery & Worthington (1999), Heyndels & Smolders (1994) and Misiolek & Elder (1988). The HHI is calculated as the sum of squared shares of the individual tax items t_i in the total local tax revenues and by definition varies between 0 and 1. Municipalities relying on just one tax source have index 1. The more taxes a government levies and the more the tax revenues are equal to each other, the lower the HHI-value. Complex tax structures thus present low HHI-values. We expect that a more complex tax structure reduces the political cost of raising local tax rates and induces higher tax rates, resulting therefore in a negative value.

Finally the renter illusion hypothesis was presented in section 2.3.5. To measure a renter illusion effect, the percentage of residences that are non-owner-occupied may be introduced in the LPTR estimation.[43] In Flemish municipalities the percentage of residences that are non-owner-occupied is gathered in the national census. Censuses are carried out at intervals of 10 years, so we lack yearly data to test the renter illusion hypothesis. Yet to test renter illusion, we project the percentage of residences that are non-owner-occupied for the years in between by spreading the change over 10 years equally among the years in between. Renters underestimate their true tax price and therefore accept more easily higher levels of local expenditure (Blom-Hansen, 2005) that for their part lead to higher levels of tax rates. A positive coefficient thus is expected.

[43] We only test the renter illusion hypothesis for the LPTR as LITR is not a property based tax.

Next to these tax rate determinants that are the result of the government's fiscal policy decisions –discussed in sections 2.3.2 to 2.3.5– we introduce the tax rate of the other tax as well as socio-economic, demographic and budgetary determinants as control variables in our model.

The introduction of the other tax rate controls for the interdependence of different tax instruments. Hettich & Winer (1988) show that political-cost-minimizing politicians diversify tax revenues among different taxes. In these models municipalities are assumed to use different taxes up to the point where marginal political costs are equated for all taxes. If so, an increase in the political cost of raising one particular tax rate prompts an adjustment in the other tax rate(s). Therefore we introduce, as do Heyndels & Vuchelen (1998), the level of LITR in the LPTR estimation and vice versa.

DEMO is a vector of demographic and socio-economic variables and controls for intermunicipal differences in preferences for local public services. The size of the municipality (POP), the share of young (YOUNG) and old people (OLD) and the rate of unemployment (UNEMPL) reflect the needs for general and specific public services respectively.[44] Positive coefficients are expected.

Revenue-generating characteristics refer to the capability of the government to collect revenues. Tax rates depend in the first place on the tax base yield (TBASE). For the local income tax rate, TBASE is measured as the tax revenue per capita of one percent local income tax. As Van Parys & Verbeke (2007) mention this measure is preferred to the average income per capita since it takes into account the progressiveness of the federal income tax. To capture the local property tax base we use the tax revenue per capita of one

[44] POP is measured as the number of inhabitants. YOUNG and OLD are calculated as the percentage of inhabitants that are below 20 and over 64 respectively. UNEMPL is the percentage of inhabitants that are unemployed.

percent (this equals 100 opc.) local property tax.[45] If TBASE represents the capability of the government to collect revenues, a negative sign for TBASE can be expected. Indeed, a higher tax base allows lower tax rates for a given level of tax revenues. Still the tax base may also represent the demand for public goods and services. The idea here is that the demand for public goods and services increases with income, requiring additional financial resources, leading to higher tax rates. The sign of TBASE thus is a priori unknown. Second, tax rates also depend on the availability of alternative revenue sources (Hettich & Winer, 1999; 290). The more a government depends on its tax revenues, the higher the tax rates are expected. To measure the dependence of the tax revenues, we introduce TDEP. In the LITR (LPTR) estimation, this variable is constructed as the part of local income (property) tax revenues in total revenues.

The level of debt can be of importance for fiscal policy. If a jurisdiction is confronted with higher levels of debt, higher tax rates can be expected given the resulting interest and amortization payments. We introduce DEBT as the debts per capita (in €1000).

Following Solé Ollé (2003) and Heyndels & Vuchelen (1998), some variables –more precisely the political and demographic variables, the tax base variables and the debt variables– are lagged one year because tax rates are set ex ante; that is, they are fixed in the autumn of the previous year. GRANT, on the other hand, is not lagged because governments know in advance the level of grants they will receive in the next fiscal year. No lags were introduced for the interaction variables because municipalities do not have to wait a year to observe the tax rates of neighbouring municipalities.[46]

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[45] For both tax base variables, the tax revenue per capita of one percent (100 opc.) local income (property) tax is calculated by dividing the total income (property) tax revenue of municipality i by the local income (property) tax rate and by the number of inhabitants.

[46] The setting of tax rates provokes a lot of public discussion. Council meetings –where these tax rates are discussed– are open to the public and politicians from neighbouring municipalities often meet so they are likely to be aware of tax rates in neighbouring municipalities and thus can react immediately. A similar assumption is made for Flemish municipalities in Geys (2006; 451) and Werck *et al.* (2008; footnote 10), but also in Buettner (2001; 227) for German local governments.

The inclusion of a linearly increasing trend variable (TREND) accounts for the (slight) upward trend in the dependent variables. The dotted lines in Figure 2 on p. 22 represent the linear trend lines.

Table A1 in appendix on p. 195 shows some descriptive statistics concerning both the dependent and the explanatory variables.[47]

2.4.3 Methodology & results

We construct a model that regresses simultaneously LPTR and LITR on various local characteristics that, according to the theoretical expectations, may influence the tax rates. Some of these characteristics open up a discussion concerning some challenging econometric issues.

First we are confronted with a "between municipalities" simultaneity problem. To measure for the impact of yardstick competition, neighbours' tax rates are introduced in the regression. These tax rates are supposed to be endogenous. The tax rate in municipality i depends on that in municipality j, but also vice versa. This introduces a specific simultaneity problem, which is well established in the spatial econometrics literature (cf. Cliff & Ord, 1973). In general the presence of endogenous regressors at the right-hand side of the equation leads to biased OLS estimates. Following Besley & Case (1995a), Heyndels & Vuchelen (1998), Brett & Pinkse (2000), Buettner (2001) and Solé Ollé (2003), we adopt an instrumental variables (IV) approach that controls for additional spatial auto-correlation of residuals, as demonstrated by Kelejian & Pruncha (1998). Like Heyndels & Vuchelen (1998; 99), we introduce the neighbouring municipality's average income, its population size, its

[47] As also for the employed datasets in other chapters, sources of the data are presented in the last column of the descriptives-tables in appendix.

percentages of people under 20 and over 64 years and its average tax rates over the past 5 years[48] as instruments in the model.

Second, the government decides on both LPTR and LITR in the same period and within the same (economic, political as social) context. Therefore the error term of the LPTR estimation could be correlated with the error term of the LITR estimation. We thus are confronted too with a "within municipality" simultaneity problem. Traditionally, Zellner's SUR method is then suggested.[49] This method permits to control for possible interaction effects in the setting of both tax rates. This interaction is not unlikely as Hettich & Winer (1988) state that municipalities use different taxes up to the point where marginal political costs are equated for all taxes. If so, an increase in the political cost of increasing one particular tax rate prompts an adjustment in the other tax rates. Consequently we may be confronted with a "within municipality" simultaneity problem. Therefore we introduce for the LPTR equation LITR as explanatory variable (and vice versa, see supra). To take into account econometrically the fact that governments consider all tax rates when setting each one individually, a simultaneous setting should be estimated. We thus have to construct a system that represents a tax structure of which both tax rates are part. It is especially "the interactions between the taxes [which] determine the characteristics of the tax system" (Gentry & Ladd, 1994; 747). Like Heyndels & Vuchelen (1998) we introduce a pooled three-stages least squares (3SLS) estimation. While two-stage least squares (2SLS) solve the "between municipalities" simultaneity problem, 3SLS allow cross-correlation between the equations and thus also solve the "within municipality" simultaneity problem. In fact 3SLS is a combination of 2SLS and SUR (Zellner & Theil, 1962). The 3SLS procedure allows for the interaction between the settings of these separate taxes. The 3SLS technique estimates both regressions simultaneously and corrects for the possible simultaneity of the left-hand-

48 Heyndels & Vuchelen (1998) introduce the average tax rates of the period 1983-1990 in their cross section analysis of (Belgian) LITR and LPTR in 1991.

49 The Seemingly Unrelated Regression (SUR) method is presented in Chapter 4 when testing whether or not vote expectations play a role in changing tax rates before elections. See section 4.4.3 on p. 136 for more details on the SUR method.

side variables. Both dependent variables are regressed on all the independent variables in the first stage. Here the reduced-form coefficients are estimated. The second stage uses the estimated values of the dependent variables derived from the first stage as independent variables to obtain 2SLS estimates using IV methods for both equations in the system. Finally, in the third stage of 3SLS, estimates of all the coefficients in the entire system of equations are obtained simultaneously using generalized least squares (GLS).

Before running our model, we tested for the existence of multicollinearity in our dataset by running a correlation analysis. The correlation matrix indicated that the pair wise correlation coefficients of POP with respectively DEBT and GRANT are over the suggested threshold of $|r|>0.80$ (see Gujarati, 2003; 359). A remedial measure then is to remove one of the highly correlated variables from the model. Still we keep POP in the analysis as throwing out POP from the model might bias the grant and debt effect. Keeping GRANT and DEBT from the analysis is neither recommended as GRANT is the focal variable to measure the grant illusion effect and DEBT is a central variable in the next chapter. Therefore we keep all variables to the model to prevent the analyses from specification errors. Indeed, "do nothing" is another option in the presence of multicollinearity. Remind that even in the presence of near multicollinearity least squares estimators are best, linear and unbiased (Gujarati, 2003; 366).[50]

Although time-series datasets are sensitive to serial correlation and heteroscedasticity, the 3SLS estimation technique presents consistent estimates despite the possible existence of these features (Wooldridge, 2002; 194).

[50] For an unbiased estimator the average or expected value is equal to the true value. A best estimator is an efficient estimator, in other words it has the least variance.

To test the different hypotheses of sections 2.3.2 to 2.3.5, we run as many models as there are formulated hypotheses. Each hypothesis is thus individually tested in a model explaining both tax rates by the hypothesis-specific variable and the control variables. Then we bring all hypotheses together in a single model. In each table, different regression results are shown. The most general possible estimations in columns (1) and (2) include all the available explanatory variables. We then gradually eliminate the least significant variables until we obtain models with only statistically significant –at least at the 10% level– coefficients in columns (3) and (4). If possible, references are made to previous literature on fiscal policy in Flemish and Belgian municipalities. For an overview of this research we refer to Table A3 in appendix on p. 199.

A. INDIVIDUAL HYPOTHESIS TESTING

In general, results of the individual hypothesis tests match reasonably well with the predicted effects. Many coefficients are significant and –when testing the individual hypotheses– our models explain about 50% of the variance of LITR and between 55% and 70% of the variance of LPTR. For both tax rates, there is an essential increase of the R^2s when testing the fiscal illusion hypothesis (see Table 11 on p. 67). Here R^2s are respectively 64% and 85%. In general the explanatory power of the presented models is much higher than previous research on LITR and LPTR (cf. Bastiaens *et al.,* 2001 and Heyndels & Vuchelen, 1998).[51] It seems that the panel characteristics of our dataset contributes to a higher explanatory power of the models. The adjusted R^2s give no indication that regressors are added without contributing to the explanatory power of the model. Wald tests were performed and reject the null hypotheses that all slope coefficients of our analysis are equal to zero.

[51] The Heyndels & Vuchelen (1998) cross-section analysis on Belgian municipalities tests interaction effects and explains 15% of LITR and 44% of LPTR. Also Van Parys & Verbeke (2007) test interaction effects, but do not present R^2 values. As in our analysis, they use panel-data (of Belgian municipalities). Bastiaens *et al.* (2001) estimate both tax rates simultaneously on a cross-section datasat of Flemish municipalities and explain 25% of LITR and 36% of LPTR.

Turning to the tests of the different hypotheses formulated in sections 2.3.2 to 2.3.5.

Table 5 presents the model to test hypothesis 1, on partisan politics.

Table 5 Estimation results of the 3SLS estimation of H_1 (on partisan politics)

Dep. Var.	1 $LITR_t$	2 $LPTR_t$	3 $LITR_t$	4 $LPTR_t$
Intercept	4.474 ***	-623.397 ***	4.267 ***	-623.397 ***
	(11.33)	(-7.39)	(23.31)	(-7.39)
ICG_{t-1}	**-0.156 *****	**-23.428 *****	**-0.157 *****	**-23.428 *****
	(-5.87)	**(-3.93)**	**(-5.98)**	**(-3.93)**
$LITR_t$	-	32.656 ***	-	32.656 ***
		(10.53)		(10.53)
$LPTR_t$	0.001 ***	-	0.001 ***	-
	(17.66)		(17.66)	
OLD_{t-1}	-3.640 ***	3155.891 ***	-3.248 ***	3155.891 ***
	(-4.09)	(16.01)	(-5.44)	(16.01)
$YOUNG_{t-1}$	-0.595	1272.509 ***	-	122.509 ***
	(-0.59)	(5.82)		(5.817)
$UNEMPL_{t-1}$	9.463 ***	5004.601 ***	9.800 ***	5004.601 ***
	(6.30)	(16.56)	(7.04)	(16.56)
POP_{t-1}	2.23E^{-05} ***	0.003 ***	2.23E^{-05} ***	0.003 ***
	(20.41)	(10.25)	(20.14)	(10.25)
$TBASE_{t-1}$	-0.111 ***	-27.782 ***	-0.110 ***	-27.782 ***
	(-28.54)	(-36.18)	(-29.17)	(-36.18)
$TDEP_{t-1}$	11.378 ***	3391.824 ***	11.380 ***	3391.824 ***
	(50.40)	(68.48)	(50.41)	(49.53)
$DEBT_{t-1}$	-0.069 ***	-4.723 ***	-0.069 ***	-4.723 ***
	(-14.84)	(-4.48)	(-14.91)	(-4.48)
$TREND_t$	0.116 ***	21.518 ***	0.116 ***	21.518 ***
	(19.11)	(21.87)	(19.13)	(21.87)
R^2	0.502	0.617	0.502	0.617
Adjusted R^2	0.500	0.616	0.500	0.616
Wald F-stat (p)	356329.60 (p<0.01)		355878.00 (p<0.01)	
N	3673	3673	3673	3673

Note: t-values between brackets (except for Wald-test where p is presented); * significant at 10%, ** at 5% and *** at 1%. Wald statistic has a Chi^2 distribution with R degrees of freedom (R being the number of estimated parameters).

ICG measures the impact of the ideological position of the government on both tax rates. In line with the theoretical expectations, ICG presents a negative coefficient for both tax rates. Leftist governments thus impose higher tax rates than rightist governments. For each increase by one unit ICG LITR and LPTR reduce with respectively 0.16% and 23 centimes. The findings that ideology has an impact on Flemish local fiscal policy is in keeping with the results of Ashworth & Heyndels (2000a & 2000b), Ashworth *et al.* (2006) and Geys (2007), which all find significant coefficients for the ideological variables, while in the tests conducted by Ashworth & Heyndels (1997) and Ashworth *et al.* (2003 & 2005) there is no evidence that ideology is important for Flemish local fiscal policy.

Table 6 shows the results of the estimation to test hypothesis 2, concerning government fragmentation. To present the results of the estimations using the 3 different fragmentation operationalisations conveniently arranged in a single table, we only present the most efficient estimation results in Table 6, thus leaving out insignificant coefficients. Nevertheless, the interested reader may find the results of the estimations including all coefficients in appendix (see Table A4 on p. 202).

Table 6 Estimation results of the 3SLS estimation of H_2 (on fragmentation) – Most efficient regressions

Dep. Var.	1 $LITR_t$	2 $LPTR_t$	3 $LITR_t$	4 $LPTR_t$	5 $LITR_t$	6 $LPTR_t$
Intercept	3.428 *** (27.625)	-774.919 *** (-9.16)	3.283 *** (23.68)	-762.640 *** (-8.99)	3.427 *** (27.61)	-779.319 *** (19.14)
$NPAR_{t-1}$	**-**	**42.824 *** (2.65)**	**-**	**-**	**-**	**-**
$NPAR^2_{t-1}$	**0.013 *** (3.06)**	**-10.213 *** (-2.72)**	-	-	-	-
$ENPAR_{t-1}$	-	-	**0.268 *** (2.88)**	**36.995 * (1.76)**	-	-
$ENPAR^2_{t-1}$	-	-	**-0.080 *** (-3.35)**	**-9.339 * (-1.74)**	-	-
$TWOPAR_{t-1}$	-	-	-	-	**-**	**27.111 *** (4.34)**
$LARGEPAR_{t-1}$	-	-	-	-	**0.117 *** (2.96)**	**-**
$LITR_t$	-	33.175 *** (10.68)	-	32.950 *** (10.60)	-	33.325 *** (10.75)
$LPTR_t$	0.001 *** (17.51)	-	0.001 *** (17.58)	-	0.001 *** (17.57)	-
OLD_{t-1}	-2.937 *** (-4.93)	3174.384 *** (16.05)	-3.145 *** (-5.24)	3167.629 *** (16.01)	-2.814 *** (-4.71)	3189.573 *** (16.19)
$YOUNG_{t-1}$	-	1260.174 *** (5.70)	-	1240.732 *** (5.63)	-	1367.793 *** (6.18)
$UNEMPL_{t-1}$	10.401 *** (7.46)	5055.487 *** (16.71)	10.659 *** (7.54)	5099.596 *** (16.88)	10.746 *** (7.75)	5007.525 *** (16.60)
POP_{t-1}	2.20E-05 *** (19.98)	0.003 *** (10.22)	2.24E-05 *** (20.34)	0.002 *** (10.020)	2.20E-05 *** (20.07)	0.003 *** (10.18)
$TBASE_{t-1}$	-0.112 *** (-29.21)	-27.804 *** (-36.00)	-0.111 *** (-28.75)	-27.878 *** (-36.16)	-0.111 *** (-29.22)	-27.843 *** (-36.28)
$TDEP_{t-1}$	11.326 *** (50.04)	3377.134 *** (49.26)	11.332 *** (50.09)	3383.700 *** (49.19)	11.315 *** (50.00)	3385.199 *** (49.53)
$DEBT_{t-1}$	-0.067 *** (-14.37)	-4.692 *** (-4.43)	-0.067 *** (-14.16)	-4.299 *** (-4.02)	-0.068 *** (-14.42)	-4.622 *** (-4.39)
$TREND_t$	0.118 *** (19.20)	21.431 *** (21.68)	0.116 *** (19.00)	21.413 *** (21.72)	0.117 *** (19.14)	21.530 *** (21.89)
R^2	0.498	0.616	0.499	0.616	0.498	0.618
Adjusted R^2	0.497	0.615	0.497	0.615	0.497	0.617
Wald F-stat (p)	354013.60 (p<0.01)		353865.30 (p<0.01)		353576.30 (p<0.01)	
N	3673		3673		3673	

Note: t-values between brackets (except for Wald-test where p is presented); * significant at 10%, ** at 5% and *** at 1%. Wald statistic has a Chi^2 distribution with R degrees of freedom (R being the number of estimated parameters).

In line with Ashworth & Heyndels (2005), Ashworth *et al.* (2005 & 2006), Geys (2007), Goeminne *et al.* (2008) and Vermeir & Heyndels (2006) Table 6 shows that fragmentation affects local fiscal policy in Flemish municipalities. In general, we can state that the effect of

fragmentation on tax rate policy is not linear. Indeed, NPAR² (in columns 1 & 2) and ENPAR² (in columns 3 & 4) present significant coefficients for both tax rates. Also most of the above mentioned papers provide evidence of a non linear effect of fragmentation on local fiscal policy. There broad-based coalitions are suggested to be more likely to follow fiscal policies representative of a larger part of the population (see e.g. Lijphart & Crepaz, 1991). These broad-based coalitions might thus be less prone to threats of minor interest groups, limiting increases in expenditures and thereby the need to set higher tax rates. This idea is confirmed by our results. Still, the pattern of the results is not a simple one. Due to the significant coefficients for both ENPAR and ENPAR² in both estimations, the ENPAR approach (columns 3 & 4) may claim the recommendation to be the preferential approach. However, none of the approaches excels in increasing the explanatory power of the model. Indeed, R^2s are similar for the different operationalisations, it thus becomes difficult to recommend one or another approach to test the impact of fragmentation on local fiscal tax rate policy. Therefore, in the following of this dissertation the different fragmentation operationalisations will be consequently tested, while at least the approach leading to the most efficient results will be presented. Returning to the results in Table 6. For both quadratic approaches the impact of fragmentation on the tax rates is calculated and is presented in Figure 5 on p. 203 in appendix. On the leftist (rightist) axis, the curves in black (grey) show the impact of fragmentation on LPTR (LITR). We distinguish between the actual number of parties approach (full lines) and effective number of parties approach (dotted lines). The curves for LPTR are concave. In the ENPAR approach LPTR increases until ENPAR is 1.98 (+36.64 centimes). Then, the increase loses power and when ENPAR exceeds 3.97, LPTR decreases. When taking into account NPAR, LPTR is the highest for governments with 2 government parties (+44.79 centimes). Governments with 5 parties have the lowest LPTR (-41.22 centimes). This concave course is only retrieved for LITR when ENPAR is chosen as fragmentation variable. Here the maximum LITR is recovered when ENPAR is 1.66 (+0.23%). When ENPAR exceeds 1.66, the increase of LITR diminishes and when ENPAR is 3.37, LITR decreases. When measuring fragmentation using NPAR, LITR increases more proportional to the number of parties.

Hypothesis 3, concerning the power of the government, is tested in Table 7.

Table 7 Estimation results of the 3SLS estimation of H_3 (on government strength)

Dep. Var.	1 $LITR_t$	2 $LPTR_t$	3 $LITR_t$	4 $LPTR_t$
Intercept	3.974 *** (10.24)	-729.705 *** (-9.02)	3.508 *** (27.86)	-729.705 *** (-9.02)
$SEATMAR_{t-1}$	**-0.511 *** (-3.82)**	**-79.628 *** (-2.66)**	**-0.525 *** (-3.94)**	**-79.628 *** (-2.66)**
$LITR_t$	-	32.119 *** (10.26)	-	32.119 *** (10.26)
$LPTR_t$	0.001 *** (17.14)	-	0.001 *** (17.09)	-
OLD_{t-1}	-3.534 *** (-3.90)	3245.782 *** (16.29)	-2.678 *** (-4.43)	3245.782 *** (16.29)
$YOUNG_{t-1}$	-1.282 (-1.27)	1242.160 *** (5.66-	-	1242.160 *** (5.66-
$UNEMPL_{t-1}$	10.587 *** (6.98)	5197.641 *** (17.22)	11.337 *** (8.12)	5197.641 *** (17.22)
POP_{t-1}	2.19E-05 *** (19.85)	0.002 *** (9.90)	2.19E-05 *** (19.92)	0.002 *** (9.90)
$TBASE_{t-1}$	-0.112 *** (-28.45)	-27.582 *** (-35.54)	-0.111 *** (-28.96)	-27.582 *** (-35.54)
$TDEP_{t-1}$	11.308 *** (49.69)	3351.609 *** (48.68)	11.309 *** (49.69)	3351.609 *** (48.68)
$DEBT_{t-1}$	-0.067 *** (-14.33)	-4.378 *** (-4.15)	-0.068 *** (-14.41)	-4.378 *** (-4.15)
$TREND_t$	0.116 *** (18.73)	21.589 *** (21.88)	0.115 *** (18.70)	21.589 *** (21.88)
R^2	0.502	0.617	0.501	0.617
Adjusted R^2	0.500	0.616	0.500	0.616
Wald F-stat (p)	349134.60 (p<0.01)		348128.80 (p<0.01)	
N	3619[52]			

Note: t-values between brackets (except for Wald-test where p is presented); * significant at 10%, ** at 5% and *** at 1%. Wald statistic has a Chi^2 distribution with R degrees of freedom (R being the number of estimated parameters).

The expectation was that stronger majorities would be less liable to opportunistic fiscal behavior as they are relatively confident about re-election, regardless of their tax setting. They thus should not have to care much about the loss of votes because of high tax rates. Both regressions of our model present a significantly negative coefficient for the SEATMAR variable, indicating that more powerful governments levy lower tax rates. Although contrary to the expectations, this result may not be that surprising. A stronger majority may indeed be less liable to opportunistic behavior without this automatically leading to higher tax rates. On the contrary, good vote perspectives may create a working environment in which a government is able to focus only on the needs of the municipality independent of possible opportunistic or strategic motivations. This may lead to lower tax

[52] Compared with Table 5 and Table 6 we lose some observations due to the lack of some SEATMAR values.

rates. Indeed, a strong government may more easily reduce spending (Volkerink & de Haan, 1999). There is for example no need to gain additional votes by increasing expenditures or developing impressive (and costly) investment projects. Instead, the government can develop long-term planning with a staggering of investments over different terms, tax rates need not be increased after elections to permit tax decreases in election years, and so on. Governments that are more confident about re-election are thus not (or less) tempted to act opportunistically and are able to focus on the good governance of the municipality. This may lead to more efficient governments, resulting in lower tax rates.

Hypothesis 4 was related to the impact of neighbouring municipalities' fiscal policy decisions. We present two approaches. In Table 8 the "within policy interaction" approach is considered, while in Table 9 the "cross policy interaction" is tested. As in most of the literature on Flemish local fiscal policy, the analyses provide evidence of interaction effects on the setting of local tax rates.[53]

[53] Only Ashworth *et al.* (2003) could not confirm their expectations about the role of neighbouring policies on the municipality's own fiscal policy.

Table 8 Estimation results of the 3SLS estimation of H_4 (on policy interaction – within policy interaction)

Dep. Var.	1 $LITR_t$	2 $LPTR_t$	3 $LITR_t$	4 $LPTR_t$
Intercept	2.725 ***	-677.465 ***	2.682 ***	-677.010 ***
	(6.01)	(-9.51)	(11.01)	(-9.52)
$LITRN_t$	**0.126 *****	**-**	**0.126 *****	**-**
	(3.43)		**(3.45)**	
$LPTRN_t$	**-**	**0.499 *****	**-**	**0.499 *****
		(29.85)		**(29.86)**
$LITR_t$	-	33.689 ***	-	33.691 ***
		(12.00)		(12.00)
$LPTR_t$	0.001 ***	-	0.001 ***	-
	(17.27)		(17.34)	
OLD_{t-1}	-3.381 ***	1578.766 ***	-3.307 ***	1577.829 ***
	(-3.88)	(8.68)	(-5.61)	(8.68)
$YOUNG_{t-1}$	-0.112	536.144 ***	-	534.993 ***
	(-0.11)	(2.76)		(2.76)
$UNEMPL_{t-1}$	11.191 ***	4419.530 ***	11.256 ***	4419.081 ***
	(7.63)	(16.49)	(8.31)	(16.49)
POP_{t-1}	2.19E-05 ***	0.003 ***	2.19E-05 ***	0.003 ***
	(20.51)	(13.52)	(20.55)	(13.52)
$TBASE_{t-1}$	-0.107 ***	-20.192 ***	-0.107 ***	-20.191 ***
	(-26.73)	(-27.04)	(-27.57)	(-27.04)
$TDEP_{t-1}$	11.114 ***	2744.030 ***	11.114 ***	2744.073 ***
	(49.10)	(41.41)	(49.12)	(41.41)
$DEBT_{t-1}$	-0.067 ***	-6.016 ***	-0.067 ***	-6.016 ***
	(-14.64)	(-6.46)	(-14.68)	(-6.46)
$TREND_t$	0.112 ***	12.303 ***	0.112 ***	12.301 ***
	(18.42)	(13.22)	(18.52)	(13.21)
R^2	0.514	0.701	0.514	0.701
Adjusted R^2	0.513	0.700	0.512	0.700
Wald F-stat (p)	397861.90 (p<0.01)		397754.60 (p<0.01)	
N	3661[54]			

Note: t-values between brackets (except for Wald-test where p is presented); * significant at 10%, ** at 5% and *** at 1%. Wald statistic has a Chi^2 distribution with R degrees of freedom (R being the number of estimated parameters).

Table 8 shows that "within policy interaction" effects are present. The results provide support for the yardstick competition hypothesis. The coefficients indicate that governments whose neighbours increase their average income (property) tax rate by 1 percentage point will also increase the LITR (LPTR) by 0.126 (0.499) percentage points. The tax rate of the neighbouring municipalities thus are used as a yardstick, still their effect is partial. The effect of the neighbouring municipalities' tax rates is clearly stronger in the case of LPTR.

[54] Removing Voeren from the dataset reduces the number of observations by 12 compared with Table 5 and Table 6.

Table 9 Estimation results of the 3SLS estimation of H_4 (on policy interaction – cross policy interaction)

Dep. Var.	1 $LITR_t$	2 $LPTR_t$	3 $LITR_t$	4 $LPTR_t$
Intercept	1.852 ***	396.898	1.974 ***	1145.404 ***
	(3.92)	(0.66)	(7.97)	(2.93)
$LITRN_t$	**0.527 *****	**-179.705 ***	**0.554 *****	**-320.083 *****
	(10.12)	**(-1.79)**	**(11.87)**	**(-4.21)**
$LPTRN_t$	**-0.003 *****	**0.723 *****	**-0.003 *****	**0.901 *****
	(-11.34)	**(5.60)**	**(-16.16)**	**(9.28)**
$LITR_t$	-	44.468 ***	-	52.227 ***
		(6.98)		(9.97)
$LPTR_t$	0.002 ***	-	0.002 ***	-
	(20.10)		(22.18)	
OLD_{t-1}	-0.613	1610.579 ***	-	1802.249 ***
	(-0.66)	(8.36)		(8.87)
$YOUNG_{t-1}$	0.602	79.504	-	-
	(0.60)	(0.24)		
$UNEMPL_{t-1}$	1.966	5052.108 ***	-	5589.666 ***
	(1.17)	(11.21)		(12.180)
POP_{t-1}	1.86E-05 ***	0.003 ***	1.77E-05 ***	0.002 ***
	(16.41)	(8.98)	(16.09)	(8.49)
$TBASE_{t-1}$	-0.130 ***	-22.379 ***	-0.129 ***	-24.023 ***
	(-29.00)	(-15.26)	(-34.77)	(-19.16)
$TDEP_{t-1}$	10.016 ***	2673.231 ***	9.881 ***	2600.809 ***
	(40.44)	(32.93)	(43.65)	(29.65)
$DEBT_{t-1}$	-0.057 ***	-5.811 ***	-0.055 ***	-5.832 ***
	(-12.04)	(-5.88)	(-11.92)	(-5.35)
$TREND_t$	0.163 ***	10.842 ***	0.168 ***	9.784 ***
	(21.61)	(8.40)	(24.94)	(8.03)
R^2	0.487	0.661	0.471	0.558
Adjusted R^2	0.486	0.660	0.470	0.556
Wald F-stat (p)	477398.60 (p<0.01)		480981.60(p<0.01)	
N	3661			

Note: t-values between brackets (except for Wald-test where p is presented); * significant at 10%, ** at 5% and *** at 1%. Wald statistic has a Chi^2 distribution with R degrees of freedom (R being the number of estimated parameters).

Results in Table 9 show that there is not only evidence of within-policy interaction, but also offers evidence of cross-policy interaction. Columns three and four show that LITR is not only defined by the level of LITRN, but also by the level of LPTRN. In this context, the within-policy interaction coefficient (of LITR) increases (from 0.126 to 0.554), showing evidence that the level of LITRN becomes more important in setting LITR, still this effect is compensated for at the expense of the level of LPTRN. An increase of LPTRN by 100 centimes reduces LITR by 0.3%. The same conclusion can be drawn for LPTR. Again the within-policy coefficient (of LPTR) increases (from 0.499 to 0.901) and the increase is compensated for at the expense of the level of LITRN. Here an increase of LITRN by 1% reduces LPTR by 320 centimes.

Taking the within- and cross-policy interaction effects together, the results of Table 9 indicate that the change of LITRN by 1% changes LITR by 0.544% and LPTR by 320 centimes in the opposite direction. A change in the average neighbouring local income tax rate is thus only partly compensated for. The same conclusion can be drawn for changes in the LPTRN. Again a change in the average neighbouring local property tax is undercompensated for. If LPTRN is changed by 100 centimes, LPTR responds in the same direction by 90 centimes, while the LITR moves in the opposite direction by 0.3%.

Both the results of the within- and cross-policy approach indicate that incumbents are more sensitive to changes in their neighbours' average property tax rate than in their average income tax rate. LPTR stronger follows changes in LPTRN than LITR follows changes in LITRN. Governments thus seem to fear more the electoral impact of not following local property tax rate reductions than of not following the local income tax rate reductions of their neighbours. We thus may assume that incumbents find LPT more electorally costly than LIT. To explain why incumbents may think that voters have more LPTR than LITR in mind when they enter the voting booth, we can appeal to differences in visibility (see Kone & Winters, 1993) and differences in tax base stability. Firstly, Vermeir & Heyndels (2006) illustrate that in Flemish municipalities the local property tax may be assumed to be more visible than the local income tax since it is levied by an assessment notice. LIT, on the other hand, are automatically collected since it is a tax which is deducted at source. Moreover, monthly bank statements indicating earnings do not mention the share of it which goes to local income tax. This is only visible in the final tax assessment, which inhabitants receive not earlier than at the end of the year following the fiscal year. The fact that LPT is much more present in total property tax due than LIT is present in total income tax due is another factor which makes it more visible. This inequality could give the inhabitants the impression that LPT is more "local" than LIT and thus make incumbents more responsible for LPTR than for LITR. Secondly, the tax base of LIT is more sensitive to changes in the business cycle than that of LPT. Governments can thus appeal to exogenous evolutions to justify LITR changes. As a result, LPTR changes can be attributed to incumbents as political acts, while LITR changes can easily be assigned to economic developments exogenously initiated.

Hypothesis 5 concerns the impact of the electoral cycle on local tax rates.

Table 10 Estimation results of the 3SLS estimation of H_5 (on electoral cycles)

Dep. Var.	1 $LITR_t$	2 $LPTR_t$	3 $LITR_t$	4 $LPTR_t$
Intercept	3.543 *** (9.12)	-794.681 *** (-9.91)	3.101 *** (22.78)	-794.681 *** (-9.91)
TBE_t	**0.185 *** (6.12)**	**56.286 *** (8.45)**	**0.185 *** (6.14)**	**56.286 *** (8.45)**
TBE^2_t	**-0.033 *** (-5.74)**	**-8.449 *** (-6.62)**	**-0.033 *** (-5.76)**	**-8.449 *** (-6.62)**
$LITR_t$	-	31.326 *** (1021)	-	31.326 *** (1021)
$LPTR_t$	0.001 *** (17.37)	-	0.001 *** (17.33)	-
OLD_{t-1}	-3.604 *** (-4.05)	3099.078 *** (15.908)	-2.799 *** (-4.71)	3099.078 *** (15.908)
$YOUNG_{t-1}$	-1.207 (-1.21)	1123.595 *** (5.22)	-	1123.595 *** (5.22)
$UNEMPL_{t-1}$	10.745 *** (7.14)	5152.767 *** (17.33)	11.457 *** (8.26)	5152.767 *** (17.33)
POP_{t-1}	$2.24E^{-05}$ *** (20.50)	0.003 *** (10.62)	$2.24E^{-05}$ (20.58)	0.003 *** (10.62)
$TBASE_{t-1}$	-0.112 *** (-28.83)	-28.349 *** (-37.29)	-0.111 *** (-29.31)	-28.349 *** (-37.29)
$TDEP_{t-1}$	11.463 *** (50.50)	3434.604 *** (50.69)	11.465 *** (50.50)	3434.604 *** (50.69)
$DEBT_{t-1}$	-0.069 *** (-14.73)	-4.771 *** (-4.58)	-0.069 *** (-14.83)	-4.771 *** (-4.58)
$TREND_t$	0.127 *** (20.03)	24.454 *** (23.42)	0.126 *** (20.00)	24.454 *** (23.42)
R^2	0.502	0.627	0.502	0.627
Adjusted R^2	0.501	0.626	0.501	0.626
Wald F-stat (p)	357466.40 (p<0.01)		356524.80 (p<0.01)	
N	3673			

Note: t-values between brackets (except for Wald-test where p is presented); * significant at 10%, ** at 5% and *** at 1%. Wald statistic has a Chi^2 distribution with R degrees of freedom (R being the number of estimated parameters).

Table 10 provides evidence of an electoral cycle for both the LITR and the LPTR. In line with the expectations and with the course of the curves of Figure 2 on p. 22, we find that governments impose lower tax rates in election years and that they increase tax rates once elections have taken place. As in Ashworth *et al.* (2005), the electoral cycle variables present a non-linear path of fiscal policy variables. This is in line with a standard finding in the public choice literature (Imbeau & Chenard, 2002). Both the LITR and LPTR increase once elections took place. The highest tax rates are observed 3 years before elections. Then, LITR is 0.26% higher than in election years, while LPTR is 14 centimes higher. When elections come near tax rates reduce to present the lowest level over the electoral cycle in

the election years.[55] From these results we could conclude that incumbents find both tax rates electorally costly.

Finally we test hypothesis 6, on fiscal illusion.

Table 11 Estimation results of the 3SLS estimation of H_6 (on fiscal illusion)

	1	2	3	4
Dep. Var.	$LITR_t$	$LPTR_t$	$LITR_t$	$LPTR_t$
Intercept	-0.107	1602.551 ***	-0.107	1547.094 ***
	(-0.27)	(23.31	(-0.27)	(25.94)
$GRANT_t$	**-0.003 *****	**0.290 *****	**-0.003 *****	**0.292 *****
	(-5.28)	**(2.55)**	**(-5.28)**	**(6.34)**
TEL_t	**6.239 *****	**-2087.134 *****	**6.239 *****	**-2073.597 *****
	(30.26)	**(-57.13)**	**(30.26)**	**(-69.90)**
HHI_t	**-3.085 *****	**-24.994**	**-3.085 *****	**-**
	(-13.75)	**(-0.62)**	**(-13.75)**	
$RENT_t$	**-**	**2.635 *****	**-**	**2.533 *****
		(6.63)		**(7.45)**
$LITR_t$	-	93.034 ***	-	94.564 ***
		(36.53)		(44.72)
$LPTR_t$	0.002 ***	-	0.002 ***	-
	(29.65)		(29.65)	
OLD_{t-1}	4.799 ***	345.459 **	4.799 ***	327.908 **
	(5.62)	(2.28)	(5.62)	(2.47)
$YOUNG_{t-1}$	4.728 ***	-1175.118 ***	4.728 ***	-1031.470 ***
	(5.02)	(-7.28)	(5.02)	(-7.31)
$UNEMPL_{t-1}$	4.319 ***	-2065.650 ***	4.319 ***	-1856.660 ***
	(2.95)	(-8.24)	(2.95)	(-8.68)
POP_{t-1}	2.54E^{-05} ***	-0.001	2.54E^{-05} ***	-
	(14.66)	(-0.58)	(14.66)	
$TBASE_{t-1}$	-0.072 ***	-35.187 ***	-0.072 ***	-35.195 ***
	(-19.18)	(-61.02)	(-19.18)	(-68.15)
$TDEP_{t-1}$	4.308 ***	959.185 ***	4.308 ***	934.874 ***
	(12.59)	(14.61)	(12.59)	(16.765)
$DEBT_{t-1}$	-0.063 ***	0.941	-0.063 ***	-
	(-13.20)	(1.13)	(-13.20)	
$TREND_t$	0.074 ***	27.648 ***	0.074 ***	27.479 ***
	(11.34)	(30.95)	(11.34)	(42.22)
R^2	0.636	0.841	0.636	0.845
Adjusted R^2	0.635	0.840	0.635	0.845
Wald F-stat (p)	727195.30 (p<0.01)		756642.20 (p<0.01)	
N	3040[56]			

Note: t-values between brackets (except for Wald-test where p is presented); * significant at 10%, ** at 5% and *** at 1%. Wald statistic has a Chi^2 distribution with R degrees of freedom (R being the number of estimated parameters).

Table 11 provides evidence of fiscal illusion, still the results are not univocal. For the LPTR there is evidence that confirms the hypotheses of grant illusion and renter illusion. Indeed, GRANT and RENT provide significant coefficients with the expected signs. In line with

[55] The joint impact of TBE and TBE^2 on LITR and LPTR for all years of the electoral cycle are presented in Table A5 on p. 203 in appendix.

[56] Our sample is reduced by two years compared to the previous tables as we do not posses individual tax revenue data –needed to calculate HHI– for the years before 1992.

Heyndels & Smolders (1994) and Van Parys & Verbeke (2007) we find evidence for the grant illusion effect. Indeed, higher grants may obscure the real tax price of public goods leading to an increase in the demand for public goods with a higher LPTR as consequence. Contrary to (the cross-section analyses of) Ashworth & Heyndels (1997), Heyndels & Smolders (1994) and Schockaert (1987) we find empirical evidence of renter illusion in Flemish municipalities. In line with the expectations we find that a higher percentage of renters in the municipality pushes the LPTR up. This provides evidence that renter illusion reduces the political cost of LPTR. In line with the test of the interaction hypothesis, this provides evidence that LPTR is electorally costly for local incumbents.[57] The higher the percentage of renters, the more the burden of high tax rates is exported to the owners (that may vote in other municipalities). This way of thinking also counts in the other direction. The positive sign may also suggest that incumbents are aware that property tax may be electorally costly when a municipality has a high percentage of owner residents (or thus a low percentage of renters). Indeed, owner residents can pay back the government for high LPTR in the voting booth, while renters may forget that the property tax is shifted to them through the rent they pay. The sign of HHI is in line with the expectations, still the coefficient remains insignificant. As in Heyndels & Smolders (1994), the sign of TEL is negative. This is opposite to the expectations. There is no evidence that a higher elasticity of the tax revenues increases LPTR. On the contrary, the negative sign points to a lower LPTR with high tax elasticity. This may suggest that in the LPTR estimation TEL suffers from a "tax dependence bias". The higher the percentage of local income tax revenues in total tax revenues, the less it is dependent on those of local property tax, so the less need to set high LPTR. This is in line with the positive sign of control variable TDEP.[58]

[57] On p. 65 differences in visibility and differences in tax base stability are quoted to support the idea that LPT may be electorally costly for incumbents.

[58] The control variables are discussed in section c. starting on p. 75

Contrary to the LPTR estimation, in the LITR estimation the expected positive sign for TEL is confirmed. This could be evidence of the tax elasticity hypothesis, still the positive sign is in line with the "tax dependence bias" as suggested in the LPTR estimation. The findings on tax complexity are in line with Bastiaens *et al.* (2001). As these authors we test the complexity hypothesis on LITR and LPTR, but find only support for LITR. The more complex is the tax structure, the higher is LITR. Or thus a higher complexity of the tax structure may reduce the political cost of raising LITR, while this is not true for LPTR. These findings are opposite to those when testing the interaction effects. On p. 65 we suggested that LPT was more electorally costly than LIT. Still there are arguments why LIT would be more electorally costly than LPT. Vermeir & Heyndels (2006) propose that in Flemish municipalities LIT may indeed have a higher electoral cost than LPT as these two differ in terms of the definition of the tax base. The property tax is source based, so tax exportation may occur. This is opposite to the income tax that is residence based. Source based taxation allows for tax exportation, possibly lowering the expected political cost associated with the property tax. Finally, companies pay local property taxes too but have no direct vote for municipal elections. Another reason thus why LPT may be less electorally costly than LIT. As in Van Parys & Verbeke (2007) there is no evidence of grant illusion in the LITR estimation. Moreover, the sign of GRANT is opposite to the expectations. Higher levels of grants lead to lower LITR. This negative coefficient may reject the hypothesis of grant illusion, still it may present evidence that local governments have lower LITR the higher the grant revenue. Here the negative coefficient may thus measure the availability of alternative revenue sources, rather than a grant illusion effect.

To summarize the findings concerning all individual hypotheses, Table 12 provides an overview of the results. Both LITR and LPTR seem, in a univariate interpretation, to be sensitive to ideology, to fragmentation, to the power of the majority and to interaction effects. The fragmentation hypothesis cannot be confirmed, still results show that tax rates depend on fragmentation. In line with Ashworth *et al.* (2005 & 2006), Geys (2007) and Goeminne *et al.* (2008) the effect of fragmentation on local fiscal policy is non-linear. Initially tax rates increase with the level of fragmentation, still for higher levels of

fragmentation, tax rates are set at a lower level. Only for the fiscal illusion, the findings are not that univocal. For the LPTR there is evidence of grant illusion and of renter illusion, while the tax complexity and tax elasticity hypotheses are confirmed for LITR.

Table 12 Findings of the individual hypothesis tests

Hypothesis			Individual H-testing LITR	LPTR
H_1 on partisan politics			Confirm	Confirm
H_2 on fragmentation			Non linear	Non linear
H_3 on government strength			Opposite sign	Opposite sign
H_4 on interaction	Within		Confirm	Confirm
	Cross		Confirm	Confirm
H_5 on electoral cycles			Confirm	Confirm
H_6 on fiscal illusion	$H_{6.1}$	Grant illusion	Opposite sign	Confirm
	$H_{6.2}$	Tax Complexity	Confirm	No evidence
	$H_{6.3}$	Tax Elasticity	Confirm	Opposite sign
	$H_{6.4}$	Renter illusion	-	Confirm

B. JOINT HYPOTHESIS TESTING

The above tests produce findings comparable to those in the literature on the specifically tested tax rate determinants. And yet these individual analyses may lead to contradictory conclusions. For example, we found evidence that suggests that income tax is electorally more costly than property tax when testing the tax complexity hypothesis, while the evidence concerning the policy interaction effects or concerning renter illusion suggests the opposite conclusion. What has to be borne in mind is that, when setting the tax rate, incumbents may simultaneously take into account the time to elections, the tax rates of their neighbours, their ideological preferences and so on. The individually tested tax rate determinants thus all contribute at the same time. Below, therefore, we test all hypotheses jointly. Results are in Table 13 and permit to figure out whether or not the analysed determinants are jointly of impact on tax rates in Flemish municipalities. Again we test different fragmentation operationalisations. To facilitate the comparison between the different approaches, we again –as in Table 6 on p. 59– only present the most efficient regressions in Table 13, while the regression results including all variables are presented in the appendix (Table A6 on p. 204).

Table 13 Estimation results of the 3SLS estimation of all joint hypotheses – Most efficient regressions

Hyp.	Dep. Var.	1 $LITR_t$	2 $LPTR_t$	3 $LITR_t$	4 $LPTR_t$	5 $LITR_t$	6 $LPTR_t$
	Intercept	-0.743 * (-1.69)	3418.063 *** (9.63)	-0.701 (-1.64)	3472.004 *** (9.53)	-0.842 ** (-1.97)	3473.083 *** (9.76)
1	ICG_{t-1}	-0.090 *** (-3.60)	41.917 *** (5.30)	-0.092 *** (-3.82)	45.059 *** (5.47)	-0.086 *** (-3.61)	41.642 *** (5.30)
2	$NPAR_{t-1}$	-0.119 * (-1.84)	45.002 *** (2.68)	-	-	-	-
	$NPAR^2_{t-1}$	0.025 * (1.68)	-8.277 ** (-2.14)	-	-	-	-
	$ENPAR_{t-1}$	-	-	-0.063 *** (-2.95)	103.164 *** (4.45)	-	-
	$ENPAR^2_{t-1}$	-	-	-	-22.916 *** (-3.84)	-	-
	$TWOPAR_{t-1}$	-	-	-	-	-0.045 * (-1.78)	21.270 *** (2.98)
	$LARGEPAR_{t-1}$	-	-	-	-	-	19.911 * (1.90)
3	$SEATMAR_{t-1}$	-0.243 ** (-1.99)	-	-	-	-0.235 * (-1.93)	-
4	$LITRN_t$	0.319 *** (6.95)	-389.582 *** (-6.70)	0.310 *** (6.74)	-409.166 *** (-6.71)	0.318 *** (6.91)	-387.052 *** (-6.71)
	$LPTRN_t$	-0.002 *** (-8.15)	0.631 *** (8.30)	-0.002 *** (-7.88)	0.656 *** (8.20)	-0.002 *** (-8.10)	0.628 *** (8.34)
5	TBE_t	0.081 *** (3.14)	31.684 *** (4.65)	0.082 *** (3.21)	31.064 *** (4.47)	0.081 *** (3.16)	31.528 *** (4.65)
	TBE^2_t	-0.011 *** (-2.33)	-3.900 *** (-3.05)	-0.012 ** (-2.41)	-3.723 *** (-2.86)	-0.012 ** (-2.34)	-3.877 *** (-3.05)
6.1	$GRANT_t$	-0.003 *** (-4.74)	0.723 *** (4.32)	-0.003 *** (-4.99)	0.735 *** (4.32)	-0.003 *** (-4.72)	0.721 *** (4.32)
6.2	TEL_t	5.537 *** (26.17)	-1924.881 *** (-33.51)	5.545 *** (26.25)	-1933.764 *** (-33.09)	5.538 *** (26.18)	-1923.429 *** (-33.60)
6.3	HHI_t	-3.128 *** (-14.35)	361.299 *** (5.01)	-3.121 *** (-14.40)	376.496 *** (5.05)	-3.119 *** (-14.33)	357.121 *** (5.00)
6.4	$RENT_t$	-	1.851 *** (3.29)	-	1.835 *** (3.20)	-	1.859 *** (3.32)
	$LITR_t$	-	110.811 *** (21.24)	-	112.125 *** (21.01)	-	110.637 *** (21.34)
	$LPTR_t$	0.002 *** (28.24)	-	0.002 *** (28.28)	-	0.002 *** (28.30)	-
	OLD_{t-1}	6.526 *** (8.01)	-	6.201 *** (7.65)	-	6.502 *** (7.97)	-
	$YOUNG_{t-1}$	6.177 *** (6.91)	-2538.261 *** (-9.36)	5.966 *** (6.73)	-2553.287 *** (-9.22)	6.106 *** (6.76)	-2517.584 *** (-9.25)
	$UNEMPL_{t-1}$	-	-	-	-	-	-
	POP_{t-1}	2.23E^{-05} *** (13.26)	-0.002 *** (-3.42)	2.32E^{-05} (13.84)	-0.002 *** (-3.64)	2.23E^{-05} *** (13.25)	-0.002 *** (-3.42)
	$TBASE_{t-1}$	-0.082 *** (-21.67)	-36.955 *** (-32.33)	-0.081 *** (-21.49)	-37.276 *** (-31.69)	-0.082 *** (-21.75)	-36.926 *** (-32.44)
	$TDEP_{t-1}$	4.615 *** (13.91)	968.783 *** (9.47)	4.620 *** (13.97)	962.281 *** (9.22)	4.613 *** (13.92)	972.060 *** (9.53)
	$DEBT_{t-1}$	-0.056 *** (-12.25)	2.290 * (1.93)	-0.058 *** (-12.69)	3.044 *** (2.49)	-0.056 *** (-12.23)	2.282 * (1.93)
	$TREND_t$	0.101 *** (13.95)	20.380 *** (12.23)	0.101 *** (13.99)	19.680 *** (11.54)	0.101 *** (13.94)	20.415 *** (12.32)
	R^2	0.642	0.642	0.644	0.627	0.642	0.650
	Adjusted R^2	0.640	0.640	0.642	0.625	0.640	0.648
	Wald F-stat (p)	711580.10 (p<0.01)		729700.80 (p<0.01)		637581.50 (p<0.01)	
	N			3323			

Note: t-values between brackets (except for Wald-test where p is presented); * significant at 10%, ** at 5% and *** at 1%. Wald statistic has a Chi^2 distribution with R degrees of freedom (R being the number of estimated parameters).

A quick glance at the results shows that the results of the individual analyses do not hold in the joint analysis. We discuss the results hypothesis by hypothesis.

The results show that in the integrated analyses, partisan politics remain to have a significant impact on both LITR and LPTR. Leftist governments levy higher LITR in the joint model. As such, the LITR estimation supports hypothesis 1. The coefficient of ICG shows that its impact on tax rates is reduced by about 40% compared to the individual model. While in the individual test there was also a significant negative coefficient for ICG in the LPTR estimation, in the joint analysis, against the expectations, the coefficient is positive. This provides evidence that leftist governments impose lower LPTR. The results of the ICG variable in the joint analysis thus show that leftist governments tend towards high income tax rates, while they prefer low property tax rates. This is in line with the general idea that left-wing governments rely more heavily on the taxation of personal income as they favour the progressivity of tax schedules[59] –as in the federal income tax on which the local income tax is a surcharge (see for example Cusack & Beramendi, 2006 and Imbeau *et al.*, 2001). On the other hand, the local property tax in Flemish municipalities lacks progressivity. This could be an explanation why leftist governments rely more on income taxes.

For hypothesis 2 on fragmentation, we again test different operatonalisations. For LPTR, the results are more or less similar to that of the individual hypothesis test. There is a non linear impact of fragmentation on LPTR. First LPTR increases with the level of fragmentation, then it decreases. The "concave impact" of fragmentation on LPTR thus remains present in the joint hypotheses test. The results for LITR are opposite to the findings of the individual analyses. Here the results suggest lower LITR with an increasing level of fragmentation. In the ENPAR-approach this effect is linear, in the NPAR- and dummy variable approach it is non-linear. In line with the previous findings of non-linearities in fiscal policy decision making and with the results of the individual hypothesis test, we prefer to recommend the non-linear approach.

[59] Wilensky (2002; 235) explicitely states that "especially progressive income taxes are the favourites of leftist parties everywhere".

The SEATMAR coefficient (to test hypothesis 3) is only significant in the LITR estimations when using the above suggested approaches of testing fragmentation, that is using NPAR or the dummy variables. As in the individual hypothesis test, the coefficient is negative. Unlike the individual test, there is no indication in this joint hypotheses test that the power of the government explains LPTR.

The results testing hypothesis 4 in the joint hypothesis setting correspond to those in the individual test. They show that tax rates depend on those of neighbouring municipalities, both in within- and cross-policy approaches. However, we find in the joint hypothesis setting that for both tax rates the within-policy loses power. Both coefficients are lower in the joint model. The same is true for the cross-policy interaction term LPTRN in the LITR estimation, while the coefficient of LITRN in the LPTR estimation gains in absolute value, suggesting a stronger cross-policy interaction effect than in the individual hypothesis test.

As in the individual hypothesis test, the joint analysis supports hypothesis 5 for both tax rates. Evidence is found that both LITR and LPTR are higher in post-election years and decreases when elections come near. All coefficients have smaller absolute values, suggesting that in the joint hypotheses test the role of the electoral cycle diminishes.

Finally the joint analysis presents significant coefficients for all tested hypotheses on fiscal illusion. Again there is no overall confirmation possible of hypothesis 6 on fiscal illusion. Comparable to the individual analysis, the sign of GRANT is negative in the LITR estimation, while it is positive in the LPTR estimation. The conclusion made in the individual analysis thus remains its validity. Still, in the joint analysis, the level of grants gains power. The coefficient more than doubles in the joint analysis, suggesting a stronger grant illusion effect in the joint analysis. The results for TEL are comparable between the individual and joint approach. As in the individual analysis, we can confirm the tax complexity hypothesis for LITR. Opposite to the findings of the individual analysis, HHI presents a significant coefficient in the LPTR estimation. Contrary to the fiscal illusion expectations, the coefficient is positive. Still this effect is not that surprising. In the absence

of fiscal illusion, HHI represents the spread of tax revenues over the different taxes. The more different taxes a government levies, the lower the average revenues per tax it needs to collect the needed total tax revenues. Therefore governments with a higher number of taxes are able to set lower LPTR. In other words, when the total tax revenues can be spread over more taxes, LPTR decreases. Finally, as in the individual hypothesis, there is evidence of renter illusion in the LPTR estimation.

The joint analysis thus presents results which are different from those of the individual analyses. Not only the power of the effects may differ; the results also show that the joint analysis may lead to opposite findings compared to the individual analysis. This can be seen in Table 14 that provides an overview of the general findings of both the individual hypothesis tests and of the joint hypotheses test. The joint analysis approach seems to affect especially LPTR. Most conspicuous here is that the hypothesis on partisan politics is confirmed in the individual analysis for both tax rates, while the joint analysis produces opposite results for LPTR. The results of hypothesis 3 for LPTR cannot be confirmed in the joint analysis. Finally in the joint analysis there is evidence that tax complexity is important in the setting of the LPTR, while the individual analysis fails to present a significant effect. These results show that individual analyses may lead to conclusions that can not be confirmed or even can be contradicted when the model is enriched with additional explanatory variables. The joint analysis even provides additional evidence that tax complexity also affects the setting of LPTR. These observations enforce our view that both tax rates are simultaneously affected by all of the tested variables and that we should attach more importance to the results of the joint analysis.

Table 14 Findings of the individual hypothesis tests and of the joint hypotheses tests

Hypothesis		Individual H-testing		Joint H-testing	
		LITR	LPTR	LITR	LPTR
H_1 on partisan politics		Confirm	Confirm	Confirm	Opposite sign
H_2 on fragmentation		Non linear	Non linear	Non linear	Non linear
H_3 on government strength		Opposite sign	Opposite sign	Opposite sign	No evidence
H_4 on interaction	Within	Confirm	Confirm	Confirm	Confirm
	Cross	Confirm	Confirm	Confirm	Confirm
H_5 on electoral cycles		Confirm	Confirm	Confirm	Confirm
H_6 on fiscal illusion	$H_{6.1}$ Grant illusion	Opposite sign	Confirm	Opposite sign	Confirm
	$H_{6.2}$ Complexity	Confirm	No evidence	Confirm	Opposite sign
	$H_{6.3}$ Elasticity	Confirm	Opposite sign	Confirm	Opposite sign
	$H_{6.4}$ Renter illusion	-	Confirm	-	Confirm

The question now is what makes the results of the LPTR estimation different in the two kinds of analysis? A number of additional analyses –not shown– were performed, combining different individual hypotheses to find out whether some variable(s) may dominate other(s). For each of the "dissident" variables (ICG, SEATMAR and HHI) we started from the single model and added variables to see the reaction of the "dissident" variable. The partisan variable ICG switches sign as soon as the fiscal illusion variables are introduced. Also the change of the effect of SEATMAR can be attributed to the fiscal illusion variables. The introduction of the policy interaction variables have the same effect on SEATMAR. Finally, HHI gains significance only in the joint model when all hypotheses are tested. In the absence of these variables, a model testing the hypotheses on partisan politics, on the power of the government or on the complexity of the tax system may lead to premature conclusions.

C. CONTROL VARIABLES

Finally some general findings on the control variables. As we prefer the joint analysis to the individual analyses (see p. 74), the discussion of the control variables is focussed on the former.

In line with the HW-model we find that municipalities have coherent tax policies in that the level of LITR is significantly and positively affected by the level of LPTR (and vice versa) in each model. This finding is comparable to Heyndels & Vuchelen (1998), who also found these cross-effects between the two tax rates. Solé Ollé (2003), however, failed to find such effects.

Next the variables reflecting the needs for general and specific local public services (POP, OLD, YOUNG and UNEMPL) are discussed. First, there is no evidence that the unemployment rate affects local tax rate policy. This is not surprisingly as unemployment policy is in the hands of the federal and regional government. The cost of unemployment thus is particularly defrayed by higher governments. Consequently it does not affect the tax rates at the local level. POP, OLD and YOUNG all affect the LITR in a significantly positive way. This is in line with the expectations. We cannot find a similar effect on the LPTR estimations. There OLD loses significance. The results also show that both larger and younger municipalities have lower LPTR.

The coefficient of DEBT is significant in both regressions.[60] The sign of the coefficient is different in both regressions. For LPTR the sign is in line with the expectations positive. Higher levels of debt may lead to higher interest payments and higher tax rates. In the LITR regression, DEBT present negative values. The observation that low levels of debt go together with high tax rates may suggest that –despite the low interest and small amortization payments faced– governments with low debt levels have to set high tax rates to finance their current expenditures.[61] In this situation, and given that increasing tax rates is electorally costly, incumbents are not expected to increase tax rates to an even higher level in order to finance additional interest and amortization payments (as a consequence of

[60] Bastiaens *et al.* (2001) do not find a significant effect of debt on the local government's tax policy.

[61] Flemish municipalities are not allowed to finance current expenditures through loans. Except for the interest and amortization payments (that appear in the current budget), the capital budget and the current budget are strictly separated. Only investments in public infrastructure may be financed through borrowing.

higher debts).[62] In other words, the political cost of raising taxes may be higher than the political cost of reducing the level of local investments. This is in line with the Alesina & Perotti (1995) findings on the debt policies of a panel OECD countries.[63]

Finally, we consider the results of TDEP, TBASE and TREND. TDEP and TREND present the expected signs. The more a government depends on a certain tax, the higher the rates and the slight positive trend in the dependent variables is taken into account in the significant positive coefficient of TREND. TBASE seems to measure the government's capability to collect revenues as a negative sign is expected. A high tax base allows to set low taxes and vice versa.

2.5 Conclusion

The purpose of this chapter was to bring together different explanations for local tax rate policy in one single model. Based on a large literature on tax rate determinants, we formulated hypotheses to test the presence of fragmentation effects, partisan effects, interaction dynamics, electoral cycles and fiscal illusion effects. The literature provides evidence for each of the individual hypotheses. The results of the individual analyses are quite similar for LITR and LPTR. For both tax rates, the results allow to confirm the hypotheses on partisan politics, on spatial tax interaction and on electoral cycles. There is also evidence of a non-linear impact of government fragmentation on the level of both tax rates. This is not in line with the theoretical expectation, but follows the empirical findings of previous research on Flemish local fiscal policy making. For both tax rates we find that stronger governments have lower tax rates. This provides evidence that a strong government may more easily reduce spending (Volkerink & de Haan, 1999). The results of

[62] This reasoning also works in the opposite direction. Governments with low tax rates have some margin to increase their rates to finance an increase of expenditure due to higher interest and amortization payments that are the result of a high level of debt.

[63] "Fiscal adjustments that relied primarily on tax increases […] failed to stop permanently the growth of public debt. On the contrary, successful adjustments are those that aggressively tackle the expenditure side" (Alesina & Perotti, 1995; 239).

the fiscal illusion test differ according to the tax rate. The grant illusion and the renter illusion effects are confirmed for LPTR, while the tax complexity and the tax elasticity effects are confirmed for LITR.

These individual analyses, however, test the presence of only one determinant at a time. We do not know of a model that measures for the joint impact of various different explanations. And yet the setting of tax rates is subject to all these determinants simultaneously. The main contribution of this chapter is that our analyses not only test six individual hypotheses but also attempt to test the joint impact of these theories. We are aware of the fact that the development of a comprehensive tax choice model is a task that is beyond the reach of this chapter and it was not our intention to create a global model. It has, however, been shown that, although largely described in significant models individually, theories on fiscal policy need to be studied and interpreted simultaneously. Our results show that especially for the LPTR, individual analyses may lead to premature conclusions. Unlike the individual models, the joint model presents evidence that tax complexity affects LPTR, while the power of the government loses its significance in the joint model. Additional analyses indicate that the fiscal interaction variables and the fiscal illusion variables are responsible for these changes and thus have an important impact of the results of the analyses. The LPTR estimations of the joint model also provide a change in the sign of the partisan variable. This switch only appears when all hypotheses are tested simultaneously. We conclude from these "changing results" that testing individual models may lead to different conclusions from those suggested when, as in reality, several tax rate determinants are taken into account simultaneously. Therefore we prefer the results of the joint analysis.

Still, we are conscious of the risk in testing the joint impact of these theories. The preliminary results of our joint hypothesis model show that there is evidence that testing a single theory model may lead to premature conclusions. Analyses of tax rate policy which neglect the joint impact of the variables may thus suffer from misspecification.

Finally, a word on the deviant findings relative to the political cost of the tax rates. When testing the policy interaction effects, we concluded that LPT is more electorally costly than LIT. When searching for the presence of an electoral cycle, we found that both tax rates increase after and reduce before elections, suggesting that both tax rates may have considerable electoral costs. Finally, the existence of renter illusion suggested that again LPT is electorally costly for incumbents. Obviously, none of the analyses reject that LPT involves electoral costs, so we may conclude that the characteristics of the tax rates suggest that LPT is more electorally costly than LIT. To explain why incumbents may think that voters have more LPTR than LITR in mind when they enter the voting booth, we can appeal to differences in visibility and differences in tax base stability.

Chapter 3 : Strategic use of debt

In this chapter the focus is on strategic debt models. We review the literature on strategic debt models and apply the insights of these models on our dataset of Flemish municipalities. In the following chapters we then use the ideas of the strategic debt models to formulate hypotheses on pre-electoral tax rate policy and on the variation between budgeted and collected tax revenues.

3.1 Introduction

Though tax-smoothing theory (Barro, 1979) suggests that deficits and surpluses are used to minimize the distorting effects of taxation, political economy models not only relate deficits and debt to the business cycle; they also point to the role of the timing of elections when framing fiscal policy.[64] This literature suggests that governments change fiscal policy to attract more votes and to increase their chances of getting re-elected.[65] But it are not only governments who believe they have a good chance of staying in office that may change fiscal policy. An interesting finding is that governments expecting to be replaced might adapt fiscal policy too. The time-inconsistency theory of politics (see Kydland & Prescott, 1977; Fischer, 1980) predicts that judgements about the likelihood of a regime change drive policy changes. A government expecting a regime change may opt to follow a second-best policy when this allows to control the fiscal setting of the future government. The creation of debt by the previous government puts a constraint on the new government that will have no choice but to accept it, possibly having to sacrifice parts of its own expenditure programme. This situation is described in the literature on strategic deficit and debt behavior.

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[64] Still there are several other political economic models that explain budget deficits, such as the ideological orientation and political fragmentation of the government, the form of the budgetary institutions, the degree of government stability, and so on. See Franzese (2001) for an excellent overview.

[65] For example Alesina *et al.* (1992) find evidence of systematic differences in fiscal and monetary policy in pre-election years.

In this chapter we investigate empirically whether strategic debt behavior is present in Flemish municipalities. Crucial in empirical tests on strategic debt behavior is to find a good proxy for the government's expectation of a regime change. For this purpose most previous empirical analyses on strategic debt models introduce historical political stability information. The novelty of this chapter is that the approach taken here is that a variable which measures the probability of electoral defeat should be based on the electorate's determinants to evaluate the government's policy. Therefore, we introduce the literature on vote functions to estimate the probability of electoral defeat.

The remainder of the chapter is organised as follows. Section 3.2 of this chapter is an overview of the relevant literature. Section 3.3 formulates some observations on the present state of the research in this field. Section 3.4 presents models to estimate the probability of electoral defeat (in section 3.4.1) and to empirically test the presence of strategic use of debt (in section 3.4.3). The results of the empirical analyses are discussed in sections 3.4.2 and 3.4.4. Some extensions are presented in section 3.4.5. Finally, concluding comments are given in section 3.5.

3.2 The literature

The literature on strategic deficit and debt behavior originates from the question whether incumbent policy makers run higher budget deficits than they would otherwise do if they were confident of re-election?

The strategic use of debt literature arises from the paper of Persson & Svensson (1989) (henceforth PS model). The PS model argues that voters have heterogeneous preferences concerning the size of the government. Some of the voters want the government to provide a significant level of public goods, while others are in favour of less government interference. The PS model assumes that incumbents adapt to the voters' preferences and act accordingly. This model predicts rightist governments awaiting a regime switch to run budget deficits up to a much higher level than when they feel secure about their political

future. The idea is to reduce the public spending of the following (leftist) government by creating more debt. Higher levels of debt bring along higher interest charges and thus reduce the scope for policymaking of the next government. The opposite reaction is expected when a leftist government anticipates a regime change. Leftist governments traditionally favour higher public expenditures. The PS model predicts that leftist governments will run a budget surplus if they know they will be succeeded by a rightist government. This budget surplus enlarges the budget of the succeeding rightist government and induces it to spend more than it otherwise would have.

The theoretical work of Persson & Svensson (1989) was followed by the contribution of Alesina & Tabellini (1990) (henceforth AT model), also theoretical in nature. This paper also emphasizes strategic considerations in the formation of debt policy, but from a different viewpoint. While the PS model focuses on the *level* of spending, the AT model assumes that governments differ with respect to their preferences concerning *the composition* of government spending. Again this is a reflection of the voters' preferences. When the government expects to be replaced, it runs a budget deficit which will bring the composition of future public spending closer to its preferences. In fact, the deficit allows the current government to spend more on public goods than it prefers by reducing future spending on the public goods it gets little utility from. Consider, for example, a government which prefers spending on education to road construction and assume that it expects to be replaced by a government with the opposite preferences. The current government could expect that spending on education will be cut by the next government. Therefore it can opt to run up a deficit and spend the extra resources on education as an advance on the spending cut in education that will follow with the take-over of the next government. Today's government thus ties the hands of future governments by allocating future tax revenues to service debt. The marginal cost of repaying the additional debt falls thus on the preferences of the new government, about which the departing government cares little.

The AT model expects a deficit bias irrespective of the government's political ideology; that is, regardless of the government's political preferences, the existence of a strong likelihood of being voted out of office will generate an incentive to issue debt. The AT model thus yields a symmetric prediction on the role of the probability of electoral defeat. The PS model's prediction, on the other hand, is non-symmetric. This model predicts that only right-wing governments issue debt. So whereas in the AT model the probability to be voted out of office raises debt per se, this is only the case for right-wing governments in the PS model.

The AT and PS model differ with respect to the assumptions made concerning the utility functions of the parties. They both assume that the political polarization and the likelihood of a regime switch are major determinants of the pre-electoral debt policy. Fiscal policy will thus be more volatile when governments expect to be replaced than when they don't.

Various authors have extended, criticized or empirically tested the PS and AT models.[66] Lockwood *et al.* (1996) build on the PS model. They assume that two parties alternate in power and have different preferences over the level of public good provision. Lockwood *et al.* (1996) innovate in assuming that incumbents do not care about –or care sufficiently little about– policy outcomes when not in power. Parties in power thus are expected to be myopic near the end of their term of office. Incumbents have the incentive to finance their expenditures by issuing debt, knowing that they will not have to face the consequences of debt financing for a while –the so-called "quasi-finite horizon effect". According to Lockwood *et al.* (1996), this implies that pre-electoral debt expansion is dominating the strategic effects of the PS model, so that in their models strategic effects appear of only

[66] Aghion & Bolton (1990), Milesi-Ferretti (1995) and Milesi-Ferretti & Spolaore (1994) also present models that explain the strategic use of debt, but from another point of view. These authors assume that budget deficits are used strategically to influence election outcome. They focus on the impact of debt decisions on the probability of getting re-elected, while in the seminal strategic debt models of AT and PS –the subject of our analysis– the causality is inverse. Therefore we do not go more deeply into these papers.

secondary importance. Incumbents only have an incentive to use debt strategically to affect their successor's tax and spending decisions insofar as it influences the level of debt that the (current) incumbent party will inherit when it is next returned to power. So, predominantly, the "quasi-finite horizon effect" rules.

The Martimort (2001) model contradicts the expectations of the PS model. The major contribution of the Martimort (2001) model is that it stresses the strategic role of budget deficits when parties differ only with respect to their redistributive concerns[67]. According to Martimort (2001), political regime switching introduces fluctuations in the distribution of utility in the economy. These fluctuations justify strategic budget distortions by governments currently in office and willing to favour their redistributive concerns against the policies of a future government.

Contrary to the PS model, Martimort (2001; 573) expects "leftist governments to be more inclined to redistribute income. By running a deficit today, the leftist government ensures that society gets poorer tomorrow. A future rightist government will have to redistribute more. The implemented tax policy will thus be close to what a leftist government would have chosen itself. On the contrary, by running a surplus today, a rightist government relaxes the burden of taxation imposed by tomorrow's leftist government on high income agents. This leftist government will be less eager to redistribute and will adopt the rightist party's behavior."

For empirical research on strategic debt models, we refer to the findings of Pettersson-Lidbom (2001), Lockwood *et al.* (1996), Carmignani (2003), Crain & Tollison (2003), Grilli *et al.* (1991), Lambertini (2003), Franzese (2001) and Ashworth *et al.* (2005).

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[67] While each type of government maximizes a social welfare function, a rightist government prefers more allocative efficiency and less redistribution than a leftist government.

Pettersson-Lidbom (2001) and Lockwood *et al.* (1996) present evidence consistent with the PS model. Pettersson-Lidbom (2001) examines the accumulation of debt by Swedish local governments and finds significantly positive effects of the probability of electoral defeat on the accumulation of debt. Using a dataset of 277 municipalities for the period 1974 to 1994, Pettersson-Lidbom (2001) finds strong differences between right- and left-wing governments. As expected by the PS model, right-wing governments accumulate more debt (+15%) when facing a higher probability of defeat, whereas the opposite occurs for left-wing governments (-11%). Lockwood *et al.* (1996) not only build on the PS model theoretically but also test their hypotheses empirically. Using annual data for the United Kingdom on government debt (and taxes and expenditures) for the period 1956 to 1996, their empirical findings are largely consistent with the theoretical expectations (as described earlier).

Carmignani (2003) and Crain & Tollison (1993) build on the AT model and find empirical support for it. For a sample of western European democracies, Carmignani (2003) shows that government instability –when it involves a replacement of decision-makers– increases the size of deficits.[68] Crain & Tollison (1993) employ data from U.S. states covering the period 1968 to 1989 and report that as the likelihood of a government change increases, the volatility of fiscal measures –and specifically taxes and the surplus/deficit levels– increases.

Other empirical studies by Grilli *et al.* (1991), Lambertini (2003), Franzese (2001) and Ashworth *et al.* (2005) find no significant evidence for the strategic use of debt or deficits. Grilli *et al.* (1991) investigate the reasons for the existence of differences in the debt-to-GNP-ratio in 18 OECD countries over the period 1960-1989, but find no evidence that

[68] We find no further information on the entities or on the time period of Carmignani's (2003) dataset. Carmignani (2003; 2) only mentions that the sample comprises western European democracies. At the end of the paper Carmignani (2003; 38) also remarks that the size of the sample is relatively small and that the panel is a pooled cross-section time series.

supports the PS or AT models. Lambertini (2003) uses U.S. (1960-1995) and pooled data for 16 OECD countries (1960-1992) to test both the PS model and the AT model. For the U.S. dataset opinion polls are used to measure the probability of being voted out of office, while for OECD countries a probit equation on the probability of government change is estimated. For the AT model, Lambertini (2003) tests whether government outlays on defence are higher under more conservative governments and whether government expenditures on social security and welfare are higher under more liberal governments. For the PS model, Lambertini (2003) investigates whether cyclically adjusted government budget surpluses are lower under conservative than liberal governments. Results show that there is no evidence that confirms the expected effects, irrespective of the model adopted (AT or PS). For none of the datasets as measured by Lambertini (2003) does the probability of being voted out of office have a significant effect on the government budget surplus.

Franzese (2001) examines the political determinants of debt and deficits for 21 OECD-countries and, like Lambertini (2003), rejects the predictions of strategic use of debt models. Franzese's (2001) bivariate analysis shows that his "risk replacement variable" does not correlate with debts or deficits. As Franzese (2001) points out himself, a bivariate analysis is actually inapt to explore conditional hypotheses like strategic use of debt theories. More importance, he argues, should be attached to his multivariate analyses. His multivariate model, however, provides no support for strategic debt policy. The risk replacement variable is marginally significant and suggests that the probability of being voted out of office provokes governments to engage in debt policy manipulation, but contrary to the PS model, leftist governments increase and rightist governments decrease deficits when the replacement risk increases.

Finally, Ashworth *et al.* (2005) examine the impact of government fragmentation on local government indebtness in Flemish municipalities for the period 1977-2000. Their analysis shows no significant impact of the number of excess seats of the ruling parties on local debt. Therefore they conclude that the lack of a significant impact "indicates a lack of evidence for strategic debt usage in Flanders".

To summarize, the empirical evidence in the literature shows no consensus on whether or not the incumbent's probability of being voted out of office explains pre-electoral debt policy.

3.3 Discussion

Although different models provide theoretical explanations for budget deficit or debt changes, the empirical evidence is relatively weak. This does not necessarily mean that the strategic models can be refuted. But some observations can be made.

First, the empirical disagreement indicates that fiscal decisions are the outcome of a more complicated political process. Variables other than the probability of being voted out of office also seem to matter for fiscal policy. Lambertini (2003) suggests that macro-economic and other exogenous events not accounted for in the PS or AT models also explain budget deficits or surpluses. To reduce the impact of these exogenous events, it might be advisable to look for evidence of the strategic use of debt behavior on single-country data, so that the impact of these types of events is constant over all observations. Consequently it is not coincidental that Pettersson-Lidbom (2001) finds evidence of the existence of the strategic use of debts when analysing Swedish municipalities.

Second, we could question whether evidence of the strategic use of debt models can be found outside two-party systems or similar situations. The AT model is developed in a two-party environment. The PS model explains the behavior of "a" rightist government expecting to be replaced by "a" leftist government or vice versa, but gives no consideration

to the precise composition of each government. The empirical tests that support the strategic use of debt models have all been performed on governments operating within a two-party system.[69] But what if more than two parties are running for government? On the one hand the strategic use of fiscal policy could become less attractive the larger the coalition becomes. This is because increasing debt might reduce the future policy options of one or more of the coalition partners who might return to office as members of a new coalition. This is not unlikely in coalition governments since the probability that at least one of the members stays in office increases the higher the number of coalition partners. Grilli *et al.* (1991) also point out that changes in coalition governments are rarely due to a total breakdown of the underlying coalition. On the other hand, Ashworth *et al.* (2006) state that parties in a coalition are on average less certain of future power than parties not sharing power. Indeed, coalition parties not only have to 'win' the elections; they also have to survive the ensuing coalition negotiations. Hence, their shorter time horizon may lead coalition governments to be more sensitive to the strategic use of debt. Consequently fragmented governments are expected to more strongly (and consciously) engage in debt creation in election years. The role of fragmentation in strategic debt models thus should be clarified.

Third, the theoretical PS model assumes that incumbents know that they will be replaced. What about the situation when electoral uncertainty leads to uncertainty about the nature of succeeding governments? Although Persson & Svensson (1989; 342) conjecture that uncertainty about whether the current government will remain in power or not would not fundamentally change their findings, Alesina & Tabellini (1990) introduce uncertainty in their theoretical model. In fact, empirical models also differ from the PS model and introduce a variable that measures the probability of electoral defeat to take into account uncertainty. Reviewing the literature, we find as many approaches to calculating that

[69] Although Swedish local governments operate in a multi-party system, Pettersson-Lidbom (2001; 575, footnote 10) reduces his dataset to a two-party environment, only taking into account strict left- or right-wing governments. Undefined governments, that is when neither left-wing nor right-wing parties constitute a majority, are removed from the dataset.

probability as there are empirical studies on the strategic use of debt. In addition to differences in model specification –such as time period, sample or differences in the definition of what is seen as deficit or debt– we suggest that the definition of the crucial variable concerning re-election prospects may explain the inconsistency in the empirical findings. We do not dispute that what moves governments to act strategically (or not) before elections is their assessment of upcoming electoral outcomes. We only address disagreement in the construction or measurement of that crucial variable.

3.4 Empirical analysis

The setting of our empirical analysis follows from the considerations above. We empirically test the existence of strategic debt models on single-country data. Our dataset consists of 294 Flemish municipalities covering four election periods (1982, 1988, 1994 and 2000). Though there are 308 municipalities, data unavailability precludes the use of more than these 294.[70] In Flemish municipalities multiple parties with various ideological characteristics compete for office in a system of proportional representation. Therefore our analysis will take into account ideological differences as well as possible fragmentation effects. Finally, we take into account uncertainty about future government participation.[71] Our crucial variable to proxy the probability of electoral defeat is not constructed ad hoc, but is derived from the literature on vote functions.

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[70] See footnote 75 on p. 94 for more details on the unbalanced dataset.

[71] In Flemish municipalities governed by a coalition, it is not uncommon that even before elections have taken place different parties meet and talk about the formation of the next government. Indeed, Ackaert (2006; 62) shows that in the build-up to the elections of October 2000, in 67.4% of the municipalities discussions about future coalitions took place during the summer. One thus could argue that in 67.4% of the Flemish municipalities, incumbents of a majority of the municipalities are certain about the participation of their party in the next government. We doubt this reasoning. First, Ackaert (2006; 63) shows that in 43.6% of those municipalities, the preparatory talks broke down even before elections. Second, the findings stem from a questionnaire during summer 2000, while tax policy decisions have to be made before the end of the year before elections (see section 1.2.4 on p. 26). The incidence of preparatory talks about one year before elections thus will be less frequent than reported. Third, Ackaert (2006) does not indicate which parties took part in these preparatory talks. It thus may be that only some or even none of the current government parties were involved. Finally, these preparatory talks or agreements are no permit to actual government participation once elections take place.

First we introduce a vote function to proxy the probability of electoral defeat. Second we test the presence of strategic use of debt in Flemish municipalities. The construct of the analysis permits a distinction between the PS- and AT-variants of strategic use of debt models, but also allows to verify the Martimort (2001) findings. Finally some extensions to the analyses are presented.

3.4.1 Expectation of electoral defeat

The strategic debt models assume that governments that expect to be replaced will change debt before elections. Crucial in these models is the introduction of a measure for the probability of electoral defeat. Pettersson-Lidbom (2001), Carmignani (2003) and Lambertini (2003) create each a –different– auxiliary equation that links the unobserved variable, that is, the expectation of electoral defeat, to a set of observable variables that might be expected to affect the probability of electoral defeat. The Pettersson-Lidbom (2001) set of explanatory variables is restricted to historical voting patterns and the frequency of previous government changes. Franzese (2001), Grilli *et al.* (1991), Ashworth *et al.* (2005) and Crain & Tollison (1993) also use historical stability variables. Franzese (2001) launches a "replacement risk variable", which is simply the inverse of the actual duration in years of the incumbent's mandate, i.e., the hazard rate of losing office in a year. Grilli *et al.* (1991) use the frequency of government changes in the past, while Crain & Tollison (1993) measure the probability of no regime change from historical seats shares. Ashworth *et al.* (2005) use the number of seats in excess of a simple majority (since previous elections). Carmignani (2003) estimates the probability of government termination by a probit analysis with different variables. Besides the stability of the government in the previous year, political fragmentation, political polarization and GDP growth in the current and previous year are introduced into the equation. Lambertini (2003) introduced two constructs to estimate a government's prospects. She first estimates an index of political affiliation of the government, calculated on election dates, change-of-government dates, the direction of the change in government and the ideological position of the government. A change in the value of the index is thus a change in the government in the Lambertini

(2003) model. Secondly, in her analysis on U.S. data, she introduces opinion polls as proxy for the probability of electoral defeat.[72]

Different authors used different methods to estimate the probability of electoral defeat. The question of what a good proxy might be remains open. We are conscious that the real expected probability of re-election or electoral defeat is hard to measure. The literature so far is focused on historical political stability determinants only. As well as these, other determinants, such as economic, tax and political variables, may explain whether incumbents get re-elected or not. Ultimately, when judging the probability of electoral defeat, incumbents need to assess voters' likely behavior in the voting booth. It thus becomes important for incumbents to evaluate the relevant determinants that voters have in mind when voting for or against the current government. The determinants of voting behavior have been studied intensively in the literature on vote functions (see e.g. Paldam & Schneider, 1980; Nannestad & Paldam, 1994, Lewis-Beck & Paldam, 2000; Revelli, 2002; Vermeir & Heyndels, 2006; Geys & Vermeir, 2008). In general these functions explain the vote (or the change in the vote) for the government at elections by (the change in) political, economic and tax variables (Nannestad & Paldam, 1994). Though part of the political variables are historical stability variables, vote functions are not restricted to these.

The novelty of this chapter is that we introduce a vote function to measure the expectation of the probability of electoral defeat. Mughan (1987; 198) makes clear that the primary purpose of vote functions should be forecasting –"predicting the outcome of an event before it occurs"– instead of explaining. Norpoth & Gschwend (2003) also show that a model based on the insights from electoral research could be a good instrument to predict the level of votes cast for incumbents. In this chapter we will use the insights of vote

[72] We do not dispute the accuracy of opinion polls, but we are not convinced that this is the best proxy for the government's expectation of electoral defeat in a multiparty system. Typically, and as in Lambertini (2003), opinion polls do not poll for the continuation of the government, which is the crucial variable in the literature on the strategic use of deficits or debt, but for the intention of the electorate to vote for a specific party or a specific candidate. Therefore, although opinion polls can be used to estimate the probability of electoral defeat in a two-party system, this is not obvious in a multi-party system as in our dataset.

function models to estimate the probability of electoral defeat of the incumbents. If they expect not to remain in power, the incumbents could decide to act strategically.

In our analysis we estimate the prospects of electoral defeat from the Vermeir & Heyndels' (2006) vote function for Flemish municipalities. To test whether yardstick voting is present in Flemish municipalities, Vermeir & Heyndels (2006) empirically analyse the votes at municipal elections. They find that incumbents are punished for higher tax rates. Moreover, the electoral punishment depends on the tax rates in neighbouring municipalities, so empirical evidence of yardstick competition is provided. Next to the tax variables –the focus of the Vermeir & Heyndels (2006) research– their analysis also contains political and economic variables. As such their model is a good starting point given the purpose of this chapter.

Still, our aim is not explaining votes, but estimating the incumbents' *judgement* of their electoral prospects. Next we introduce these prospects in the explanation of debt policy changes in election years. Therefore we first reconstruct Vermeir & Heyndels' (2006) vote function. Second, we will apply this function on the pre-electoral years' values of its explanatory variables to calculate the government's vote expectations. This adjustment is necessary as Flemish local governments have to endorse the (Balanced) Budget before December 31 of the year before.[73] If incumbents would like to act strategically in the election year, changes in the level of debt thus should be agreed on in the year before elections. The decision whether or not to change local debt strategically in election year t thus has to be made in year t-1. Indeed, incumbents have to judge their electoral prospects one year before elections. Given both the role of each of the explanatory variables in the vote percentage and their values in the pre-election year t-1, we can generate the expected number of votes of the government at the timing of the Budget.

[73] We may refer to section 1.2.4 on p. 26 for a more detailed description of the budgetary proces.

First, we reconstruct Vermeir & Heyndels' (2006) vote function estimation as presented in equation (II.) that explains the percentage of votes the incumbent party (or parties[74]) receives at the elections in year t :

$$(II.)\quad V_{it} = \alpha_1 + \alpha_2 V_{it-6} + \alpha_3 TAX_{it} + \alpha_4 NTAX_{it} + \alpha_5 EXP_{it} + \alpha_6 NEXP_{it} + \alpha_7 NTI_{it} + \alpha_8 UNEMPL_{it} + \alpha_9 NPAR_{it} + \text{year dummies} + \text{party dummies} + u_{it}$$

where: i = 1,..., N; t = election years

V_{it} represents the vote percentage of the government party (parties) of municipality i in election year t. The first explanatory variable is the vote percentage of the same government party (parties) in the previous elections (V_{it-6}). The coefficient of V_{it-6} is expected to have a positive impact on the number of votes.[75] TAX_{it} is a vector of tax instruments and includes the local income tax rate ($LITR_{it}$) and the local property tax rate ($LPTR_{it}$). We expect the tax rates to have a negative impact on the vote percentage. Per capita public expenditure (EXP_{it}) is included to measure for the quantity (and/or quality) of public output. A positive impact on the votes is expected from this. We refer to the theory of yardstick voting –which suggests that voters compare their own municipality to their neighbouring municipalities when deciding on their vote (Besley & Case, 1995a and Revelli, 2002)– to include tax variables of neighbouring municipalities ($NTAX_{it}$). We introduce the

74 The vote share corresponds with the sum of the shares of the coalition partners in the case of coalition governments.

75 Two remarks concerning this variable. First, this variable is not strictly a lagged dependent variable. This could be a lagged dependent variable, but only when the previous government stayed in office. Second, the definition of this variable implies that the dataset does not contain data of all Flemish municipalities. Sometimes it is impossible to calculate previous election results of the government. Parties may split up, merge with another party or change their names. Also parties can disappear and not compete in next elections or a member of the government can change parties. The dataset –that corresponds with that of Vermeir & Heyndels (2006)– only contains observations of which previous election results can be indisputably calculated. We thus are confronted with an unbalanced panel as we do not have observations for every election in every municipality. Finally our dataset contains 688 observations of 294 (out of 308) municipalities.

average local tax rates of the neighbouring municipalities ($LITRN_{it}$ and $LPTRN_{it}$)[76]. Also the average per capita expenditures ($NEXP_{it}$) of the neighbouring municipalities is introduced. Average local tax rates of neighbouring municipalities are expected to positively affect the votes, while negative values are anticipated for the average per capita expenditures of the neighbouring municipalities. As the literature on economic voting[77] suggests that governments are held accountable for economic developments, net taxable income (NTI_{it}) and the unemployment rate ($UNEMPL_{it}$) are introduced.[78] Income is expected to have a positive effect on votes, while the opposite is true for unemployment. Political characteristics enter vote function (II.) through the number of government parties ($NPAR_{it}$) which measure for clarity of accountability.[79] More coalition partners are expected to reduce transparency. Fragmented governments are thus held less accountable for positive and negative developments (Powell & Whitten, 1993). As governments are more punished for negative developments than they are rewarded for positive developments, Nicholson & Segura (2002) show that fragmented governments generally suffer smaller electoral losses. A positive effect of the number of government parties on the vote is thus expected. The possibility of vote swings among government parties is another

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76 As in chapter 2 all "neighbouring" variables are estimated as the unweighted average of the values of the Flemish neighbouring municipalities. For Flemish municipalities across the language boundary, only Flemish neighbours are taken into account. Therefore Voeren is removed from the dataset as it has no Flemish neighbours.

77 The literature on economic voting presumes that voters observe the government's management of the economy. In short, if the economy does well, voters conclude that the government is competent. If the economy does poorly, they conclude that the government is bad. In the former case, voters re-elect the government, in the latter case they vote for the opposition. See Lewis-Beck & Paldam (2000) for an overview.

78 Remark that these economic variables are the result of macro-economic policy which is mainly a federal and regional responsibility. Despite their objective to interfere local governments may still have a (marginal) influence or may be held accountable by the electorate. Local governments can e.g. approve the layout of additional company grounds or decide to lower local company taxes to stimulate local economic activity.

79 Vermeir & Heyndels (2006) do not enter a measure for the government's ideology in their vote-function. We tested the impact of the ideological complexion of the government on the votes in Table A9 on p. 206. As can be seen from this table, the ICG-variable is not significant. Also possible interaction effects with the other political and tax variables fail to present significant coefficients. When removing insignificant variables from the model, our results are consistent with these of Vermeir & Heyndels (2006) as reproduced in column (2) of Table 15 on p. 98.

possible explanation for a positive coefficient as it is less clear which party voters might hold responsible for policy. Year dummies are introduced to capture possible year effects.[80] Finally, party year dummies are introduced, as Heath *et al.* (1999), Jérôme & Lewis-Beck (1999) and Revelli (2002) show that local election results reflect national party popularity rather than the appreciation of local developments and policies. The impact of national or regional politics on local elections is captured by the inclusion of party dummies for the five national parties that participated in municipal governments and this for each election year.[81]

3.4.2 Methodology and results

We intend to use the Vermeir & Heyndels (2006) vote function as an instrument to estimate the probability of electoral defeat. Therefore, we first reconstruct the results of Vermeir & Heyndels' (2006) vote function as close as possible. They tested different approaches, including pooled OLS regressions, OLS regressions including fixed municipality effects, 2SLS regressions with and without municipality fixed effects and conclude that their preference goes to the 2SLS regression without municipality effects (Vermeir & Heyndels, 2006; 2295).[82] Therefore we estimate equation (II.) technically analogous to Vermeir & Heyndels (2006) and use a 2SLS approach –without municipality effects– in which internal and neighbouring tax variables are instrumented.[83] Frey & Schneider (1978b) and Schneider & Pommerehne (1980) show that tax variables in the UK and Australia respectively may not be assumed to be exogenous, as the level of popularity

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80 Year effects are introduced to measure the electoral change common to all governments in a certain year. Vermeir & Heyndels (2006; footnote 20 on p. 2291) provide the example of the electoral rise of the extremist party Vlaams Blok (Vlaams Belang).

81 We introduced dummies for the liberal democratic VLD, for the social democratic SP.a, for the Christian democratic CD&V, for the ecologist GROEN! and for the nationalist VU. The extreme-right Vlaams Blok (Vlaams Belang) participates in none of the local governments. Some of these parties changed their name during or after the years under investigation. See section 1.1.3 on p. 13 for more detailed information.

82 We refer to Vermeir & Heyndels (2006) for an overview of the results of all tested approaches.

83 These "neighbouring tax variables" are the local income tax rate, the local property tax rate and per capita expenditures.

affects tax policy. We thus may expect that the error term is correlated with the tax rates. Neighbouring tax variables are instrumented because the presence of spatial correlation in the error is suggested by Revelli (2001) and Solé Ollé (2003) in their models on tax mimicking. We follow Vermeir & Heyndels (2006) by instrumenting own tax rates and per capita expenditures by the percentage of young people and elderly, the average sale price of small and middle sized houses and the number of inhabitants. Tax rates and per capita expenditures of neighbouring municipalities are similarly instrumented. The Sargan tests on the validity of the instruments indicate that the instruments are valid.[84] Table 15 presents the results of the estimation. Descriptive statistics of the explanatory variables are shown in Table A7 on p. 205 in appendix.

[84] The Sargan test tests the validity of the instrumental variables. Under the null hypothesis that all instruments are valid –they are uncorrelated to some set of residuals– the Sargan statistic is Chi^2 distributed with R degrees of freedom (R being the number of instruments minus the number of estimated parameters). If we fail to reject the hypothesis –which is the case in our model, since p exceeds the value 0.10– the instruments are acceptable.

Table 15 IV estimation of the vote share of the government parties in election year t

Dependent variable : Vote share of the government parties (V_{it})	(1)	(2)
Intercept	40.814 *	15.233
	(1.67)	(1.22)
Prior vote (V_{it-6})	0.760 ***	0.757 ***
	(15.91)	(17.89)
Local income tax rate ($LITR_{it}$)	-6.733 **	-5.413 ***
	(-2.08)	(-3.51)
Local property tax rate ($LPTR_{it}$)	0.003	-
	(0.18)	
Per capita expenditures (EXP_{it})	-2.642	-
	(-0.39)	
Local income tax rate neighbours ($LITRN_{it}$)	4.977	7.050 ***
	(0.81)	(2.71)
Local property tax rate neighbours ($LPTRN_{it}$)	-0.004	-
	(-0.17)	
Per capita expenditures neighbours ($NEXP_{it}$)	-17.077 **	-12.643 ***
	(-2.46)	(-3.12)
Net taxable income (NTI_{it})	-1.978	-1.666 ***
	(-1.55)	(-3.18)
Unemployment rate ($UNEMPL_{it}$)	-2.481	-
	(-0.03)	
Number of government parties ($NPAR_{it}$)	2.197 *	2.157 ***
	(1.73)	(3.60)
1994 year effect (Y_{94})	5.916 **	-
	(2.08)	
2000 year effect (Y_{00})	3.292	-
	(1.02)	
Party effects	Yes	Yes [85]
Wald test party effects : F (p-value)	1.355	8.520 [86]
	(p=0.17)	(p<0.01)
R^2	0.238	0.298
Adjusted R^2	0.208	0.291
Sargan test of overidentifying restrictions (p-value)	2.529	2.372
	(p=0.28)	(p=0.80)

Note : N=688; Values in parentheses are t-values (except for Sargan and Wald tests, where p-values are presented); * significant at 10%, ** at 5% and *** at 1%.

In this table, column (1) provides the most general results, while in column (2) only the statistically significant variables are maintained and as such provide the most efficient estimation. We focus on the latter. The prior vote (V_{it-6}), the municipality's own local income tax rate ($LITR_{it}$), the average local income tax rate in the neighbouring municipalities ($LITRN_{it}$), the average per capita expenditure in the neighbouring municipalities ($NEXP_{it}$), the net taxable income (NTI_{it}) and the number of parties ($NPAR_{it}$) have a significant impact on the vote percentage of government parties. All significant

[85] Vermeir & Heyndels (2006) present results with and without party-year dummies. As their regression with party-year dummies has the highest adjusted R^2, we reconstruct their model including those dummies.

[86] Insignificant party dummies are left out. The Wald test is performed for the remaining party dummies.

variables have the expected signs and the coefficients are highly comparable to Vermeir & Heyndels (2006).[87]

It is clear from Table 15 that local tax policy has an impact on election results. The regression results show that the government's local income tax rate negatively influences the vote percentage. High local income tax rates are thus electorally costly, while there is no evidence that local property tax rates have an impact on the votes for the government. This finding is opposite to what we have concluded in the previous chapter. Given the findings in chapter 2 our conclusion on p. 79 was that local property tax is more electorally costly than local income tax. We attach more importance to the findings in this section as here the impact of tax rates on the votes is estimated and thus really shows how votes depend on the tax rates, while in chapter 2 characteristics of tax rates are investigated that may explain or may suggest differences in electoral cost.[88]

The average local income tax rate of the neighbouring municipalities affects the vote percentage positively, so voters use the tax policies of surrounding municipalities as a yardstick. Per capita expenditures in neighbouring municipalities have a negative effect on the vote percentage, while there is no significant impact of the expenditure level in the municipality itself.

Also political variables are of importance when explaining the vote percentage. The number of government parties presents a positive coefficient, confirming that fragmented governments lose fewer votes. With regard to the party-year effects, we only find the dummy for the liberal party in 2000 to present a significant coefficient.[89]

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87 We compare to Vermeir & Heyndels' (2006) 2SLS results as presented in column (4) of (their) Table 5 (on p. 2294).

88 See p. 69 for arguments why local income tax would be more electorally costly than local property tax.

89 The coefficient of this dummy is 3.761 ($t=2.92$, $p<0.01$) providing evidence that the Liberal party benefits at the local level from its electoral success at the Federal and regional government level. At both government levels, The Liberal party won the 1999 elections, re-entered the governing coalitions and delivered the prime ministers. Vermeir & Heyndels (2006) do not report on the party-year effects.

Finally, there is evidence that voters hold local governments responsible for macro-economic policy as NTI_{it} has a significant negative sign. Vermeir & Heyndels (2006) refer to the 'clientele hypothesis' by Rattinger (Rattinger, 1981 & 1991) as this may explain that "at lower levels of income, voters tend to stay with or go back to traditional government parties" (Vermeir & Heyndels, 2006; 2292)[90]. The lack of a significant impact of $UNEMPL_{it}$ suggests that voters do not hold local governments responsible for employment policy. Indeed, "most policy instruments to fight unemployment are in the hands of the federal an regional government"(Vermeir & Heyndels, 2006; 2292).

The next step is to generate the *forecasted values* of the vote percentage. For each observation we generate the forecasted value of the vote percentage from the vote function as estimated in Table 15 using one year lagged values for the explanatory variables.

In Table A8 on p. 205 we present some statistics on both the forecasted values resulting from the preceding analysis (V^f_{it})[91] and the outcome of elections (V_{it}). Mean, median and maximum values are highly comparable. The histograms show that also the frequency distribution of both series is comparable. The correlation between the two values is 0.62. Whether or not these forecasted values explain strategic debt policy is estimated in the following section.

[90] Vermeir & Heyndels (2006) ran separate regressions that show that less traditional parties -as the Green Party or Vlaams Belang that respectively were in power in only a few or in none of the municipalities- fare better at higher levels of income, while the opposite is true for traditional government parties.

[91] To indicate that we use forecasted values, we add an "f" to V_{it}.

3.4.3 Strategic use of debt

In this section we test for the existence of the strategic use of debt in Flemish municipalities. In general, we look for evidence whether or not the change in debt in election years is directed by the government's vote expectation. The theory of the strategic use of debt predicts governments not expecting to be re-elected in the next election to change debt. If so, the change of debt in election years should be a function of the governments' re-election prospects. To empirically test this hypothesis, we run regression (III.), which explains debt policy changes in election years:

$$(III.)\quad \Delta DEBT_{it} = \beta_1 + \beta_2\, PED_{it} + X_{it} + u_{it};$$

where : i = 1,..., N; t = election years 1988, 1994, 2000

The dependent variable $\Delta DEBT_{it}$ measures the year-to-year change in debt per capita in election years and is explained by the probability of electoral defeat (PED_{it}) and some control variables (X_{it}).

We build on the estimation of the vote percentage (V^f_{it}) from sections 3.4.1 and 3.4.2 to take into account the government's prospects of electoral defeat. We transform V^f_{it} to a dummy variable (PED_{it}) that takes value 1 if the government does not expect to get a majority of the votes at the next elections –and thus is expected to be voted out of office– and 0 if it expects to get its mandate renewed. In other words, this dummy variable gets value 1 if the forecasted vote percentage (V^f_{it}) is below majority ($V^f_{it}<50\%$) and 0 otherwise. This operationalisation is inspired by Norpoth & Gschwend (2003) who find that governing coalitions whose parties obtain a majority in an election usually remain in office. In line with Norpoth & Gschwend (2003) we assume that governments that regain a majority of the votes stay in office, while those who fail in that objective are replaced by a new government. Dummy variable PED_{it} takes this assumption into account.

Like Pettersson-Lidbom (2001), we try to discriminate between the PS and AT models. According to the AT model we may expect governments with expectations of defeat to issue debt irrespective of their political ideologies. Conversely, the PS model predicts that

only rightist governments issue debt when they expect to be replaced, while leftist governments are expected to do the opposite. The introduction of an interaction variable with product terms PED_{it} on the one hand and dummy variable $LEFTMAJ_{it}$ on the other hand permits to distinguish between the two models. $LEFTMAJ_{it}$ equals 1 if leftist parties have at least 50% of the seats in the College and 0 otherwise.[92] The interaction also allows to test the Martimort (2001) findings that –opposite to the PS model– leftist governments that expect a defeat increase debt, while a decrease is expected for rightist governments with bad electoral prospects. To test these different models we extend equation (III.) to :

$$(IV.)\quad \Delta DEBT_{it} = \beta_1 + \beta_2\, PED_{it} + \beta_3\, LEFTMAJ_{it} * PED_{it} + \beta_4\, LEFTMAJ_{it} + X_{it} + u_{it};$$
$$\text{where : } i = 1,..., N;\ t = \text{election years}$$

To find out whether our analysis presents evidence of the strategic use of debt, then in estimation (IV.) we should focus on β_2 and β_3. Whether strategic debt behavior is in line with the AT, the PS or the Martimort (2001) expectations depends on the interpretation of both coefficients simultaneously.

If β_2 is significantly positive, while the interaction variable β_3 remains insignificant, there is support for the AT model, as governments –irrespective of their political ideologies– expecting an electoral defeat increase debt.

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[92] For the definition of our dummy variable $LEFTMAJ_{it}$ we take into account the number of seats of the Socialists and of the Ecologists. As can be derived from Table 2 on p. 18 Deschouwer (1996) & Rihoux (2001) position the Christian Democrats, the Nationalists and local parties at the centre. The Ecologists and the Socialists are at the left of the centre, while the Liberals are at the right of the centre. The anti-immigrant party Vlaams Blok is at the extreme right of the spectrum. Thus in our analysis, we distinguish between leftist parties ($LEFTMAJ_{it}=1$) and parties on the centre or on the right of the centre ($LEFTMAJ_{it}=0$). This approach is in line with Pettersson-Lidbom (2001). Still to improve consistency between the different chapters of this dissertation, we also introduced alternative "left-wing" variables in conformity with those presented on p. 19. First ICG_{it} was introduced. Alternatively we created a dummy variable $LEFTGOV_{it}$ taking value 1 if $ICG_{it} < 5$ and zero otherwise. None of the approaches improve the results, so in this section the results in line with the Pettersson-Lidbom (2001) approach are presented. In Table A12 on p. 209 we presents the estimation results including the alternative approaches.

Should the following three conditions be fulfilled, that is β_2 is significantly positive, β_3 is significantly negative and $(\beta_2 + \beta_3)$ is negative, there is evidence for the PS model, in which leftist governments anticipating an electoral defeat decrease debt, while other governments with the same prospects increase debt.

Finally, if β_2 is significantly negative, β_3 is significantly positive and $(\beta_2 + \beta_3)$ is positive, there is evidence in line with the Martimort (2001) model that has opposite expectations to the PS model.

Variable X_{it} in equation (IV.) stands for variables affecting debt policy. Although we expect strategic motivations for the change of debt, other determinants may also explain this change.

First we take into account the level of debt in pre-election years ($DEBT_{it-1}$). This variable can have opposing effects on the level of debt changes. On the one hand we may assume that governments with low debts have more "margin" to increase debt than governments with higher debt levels. Conversely, highly indebted governments are expected to be more unresponsive to increase debt as this would worsen their financial position all the more. An additional increase of debt raises –ceteris paribus– the cost of debt, that for its part may lead to an additional need for debt financing. Still this expected unresponsiveness may be unrealistic. Indeed, high levels of debt may become self-reinforcing. This is called the "snow ball effect" and should result in a positive sign. The sign of $DEBT_{it-1}$ thus is a priori unknown.

The change in the inhabitants' net taxable income (ΔNTI_{it}), measured as the year-to-year change in the net taxable income per capita, can have two (opposing) effects on the evolution of the level of debt (Ashworth *et al.*, 2005). On the one hand ΔNTI_{it} is an indication of the change of the fiscal capacity of the municipality –as much of the local

revenue comes from local income tax. An increase of the net taxable income may reduce the need for loan financing, thus a negative sign can be expected. On the other hand, ΔNTI_{it} may indicate changes in the demand for public goods and may increase this need for debt financing. This may lead to a positive sign (Geys, 2007). Taking both effects together, the sign of ΔNTI_{it} is a priori uncertain.

Not only changes in the taxable income, also changes in demographic and socio-economic variables may lead to changes in the demand for public expenditures and have an effect on debt evolution. In chapter 2 on p. 52 we introduced demographic and socio-economic variables in the tax rate estimations as they may reflect the needs for public services. When estimating debt policy changes, we may control for the impact of changes in these variables to capture changes in the demand for public expenditures that may explain for their part changes in debt policy (Ashworth *et al.*, 2005 & Geys, 2007). Therefore we introduce the changes in the proportion of young inhabitants ($\Delta YOUNG_{it}$), changes in the proportion of elderly inhabitants (ΔOLD_{it}), changes in the unemployment rate ($\Delta UNEMPL_{it}$) and changes in the number of inhabitants (ΔPOP_{it}) in estimation (IV.). These variables are the year-on-year change of the percentage of inhabitants that are, respectively, below 20, over 64 and unemployed and the year-on-year change of the number of inhabitants. Each time positive coefficients are expected because higher levels of young, elderly and unemployed could represent a higher demand for specific heavy capital expenditures such as schools, care of the elderly or social housing, leading to higher levels of public debt (Bahl & Duncombe, 1993), while an increase in the number of inhabitants represents the need for additional public services and infrastructure in general.

The change of debt may also respond to the financial costs of borrowing (Ashworth *et al.*, 2005 & Geys, 2007). The idea is that an increasing cost of borrowing restrains rational governments from increasing debt financing. Besides the level of debt, borrowing costs depend on the real interest rate on long-term (federal) government bonds. We introduce

this rate's year-to-year change ($\Delta INTEREST_{it}$) to measure changes in the cost of borrowing. A negative sign is expected.[93]

Also political variables have received attention as determinants of debt policy before (see e.g. Alesina & Perotti, 1994; Gärtner, 2000; Ashworth *et al.*, 2005). In our regression, ideological differences are taken into account by the introduction of dummy $LEFTMAJ_{it}$. We expect a positive value here, as in public finance literature it is widely accepted (see Hibbs, 1977) that leftist governments have higher spending, which we may assume that they are at least partly financed by debt. Leftist governments thus are expected to increase debt more easily. Higher spending may also be expected for fragmented governments. The Weak Government Hypothesis (Roubini & Sachs, 1989a,b) attributes higher public spending to more fragmented (or divided) governments because several conflicting political objectives have to be accommodated. Fragmentation ($FRAG_{it}$) thus may more easily lead to an increase in debt. As in chapter 2 on p. 48 we operationalise $FRAG_{it}$ in different ways. We introduce the number of government parties ($NPAR_{it}$) as well as the effective number of government parties ($ENPAR_{it}$) to measure the effect of fragmentation. However, their effects on $\Delta DEBT_{it}$ may not be linear. We refer to Ashworth *et al.* (2005 & 2006), Geys (2007) and Goeminne *et al.* (2008) who have previously found a non-linear effect of government fragmentation on Flemish local governments' fiscal decision-making. As a matter of fact Geys (2007; 246) finds that "in election years […] the growth rate of local public debt is lower for one-party governments compared to large coalitions[94]". Consequently, we then test a non linear specification, adding squared terms $NPAR^2_{it}$ and $ENPAR^2_{it}$. Alternatively, dummy variables $TWOPAR_{it}$ and $LARGEPAR_{it}$ for governments consisting of, respectively, two and at least three parties –with single party governments as the remaining category– are introduced.

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93 Note that the interest rate varies over time but not over municipalities, it thus can only explain within municipality variation and not between municipality variation.

94 In Geys (2007) "large coalitions" are coalitions with 3 or more parties.

Finally we introduce year-dummies to capture year effects.

Replacing X_{it} in equation (IV.) with these control variables, we estimate the following equation:

$$(V.)\quad \Delta DEBT_{it} = \beta_1 + \beta_2\, PED_{it} + \beta_3\, LEFTMAJ_{it} * PED_{it} + \beta_4\, LEFTMAJ_{it} + \beta_5\, DEBT_{it-1} + \beta_6\, \Delta NTI_{it} + \beta_7\, \Delta YOUNG_{it} + \beta_8\, \Delta OLD_{it} + \beta_9\, \Delta UNEMPL_{it} + \beta_{10}\, \Delta POP_{it} + \beta_{11}\, \Delta INTEREST_{it} + \beta_{12}\, FRAG_{it} + \text{year dummies}_t + u_{it};$$

where : i = 1,..., N; t = election years

3.4.4 Methodology and results

Table 16 presents the results of the debt change estimation. A linear regression on panel data with random effects is implemented and covers data from 294 of the 308 Flemish municipalities.[95] Since our number of years is small and the number of cross-sectional units is rather large, random effects model estimators are more efficient than fixed effects model estimators (Gujarati, 2003; 651). Moreover, introducing a fixed effects model would be expensive in terms of degrees of freedom since we have only three time series of data. The Hausman tests we present also suggest that it is safe to use random effects.[96]

Before estimating our model, we test for the existence of multicollinearity in our dataset. Therefore we run a correlation analysis. The correlation matrix indicated that the pair wise correlation coefficient of $\Delta YOUNG_{it}$ and the year dummy for 2000 ($r=-0.97$) exceeds the suggested threshold of $|r|>0.80$ (see Gujarati, 2003; 359). Therefore we shift the year dummy from the analysis.

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95 We continue on the dataset used to estimate the vote-function. For remarks on the composition of the dataset we refer to footnote 75 on p. 94. In addition we lose one more observation as we do not have data for the level of debt per capita in 1993 for the municipality Aarschot.

96 A Hausman test controls whether the H_0 that the coefficients estimated by the random effects estimator are the same as the ones estimated by the fixed effects estimator. The insignificant p-values presented in our model indicate that we fail to reject the H_0 and allows us to use random effects.

Table 16 presents results of the OLS estimation (with random effects) of per capita debt change in election years. Odd columns present results including all variables. More efficient regressions in which insignificant variables are omitted are presented in even columns. As in chapter 2 different operationalisations of the fragmentation variables are presented. In columns (1) and (2) we use the actual number of parties ($NPAR_{it}$) and its squared term. In columns (3) and (4) the effective number of parties ($ENPAR_{it}$) and its squared term is introduced. In columns (5) and (6) the dummy variable approach testing the impact of two party coalitions ($TWOPAR_{it}$) and coalitions with at least three parties ($LARGEPAR_{it}$) compared to single party governments.

Table 16 Estimation results of the debt change function, using OLS with random effects

Dependent variable : $\Delta Debt_{it}$	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-1.327	34.481 ***	21.105	34.481 ***	15.778 ***	34.481 ***
	(-0.05)	(5.20)	(0.74)	(5.20)	(1.33)	(5.20)
PED_{it}	6.500	-	4.937	-	6.581	-
	(0.69)		(0.54)		(0.70)	
PED_{it} * $LEFTMAJ_{it}$	-9.536	-	-10.104	-	-10.065	-
	(-0.39)		(-0.42)		(-0.41)	
$LEFTMAJ_{it}$	-4.827	-	-0.519	-	-4.236	-
	(-0.34)		(-0.04)		(-0.30)	
$DEBT_{it-1}$	0.018	-	0.019 *	-	0.019	-
	(1.62)		(1.71)		(1.64)	
ΔNTI_{it}	55.006	-	55.722	-	54.867	-
	(1.44)		(1.46)		(1.44)	
$\Delta YOUNG_{it}$	2973.019 **	3259.128 **	3090.512 **	3259.128 **	3045.109 **	3259.128 **
	(2.07)	(2.30)	(2.15)	(2.30)	(2.12)	(2.30)
ΔOLD_{it}	5345.037 **	5559.006 **	5530.674 **	5559.006 **	5412.55 **	5559.006 **
	(2.085)	(2.20)	(2.16)	(2.20)	(2.11)	(2.20)
$\Delta UNEMPL_{it}$	17.770	-	23.823	-	14.072	-
	(0.03)		(0.03)		(0.02)	
ΔPOP_{it}	0.003	-	0.003	-	0.003	-
	(1.34)		(1.33)		(1.33)	
$\Delta INTEREST_{it}$	127.806 **	147.184 ***	132.539 **	147.184 ***	130.405 **	147.184 ***
	(2.44)	(2.89)	(2.53)	(2.89)	(2.49)	(2.89)
FRAG						
$NPAR_{it}$	22.964	-	-	-	-	-
	(0.94)					
$NPAR^2_{it}$	-5.585	-	-	-	-	-
	(-0.94)					
$ENPAR_{it}$	-	-	-1.344	-	-	-
			(-0.04)			
$ENPAR^2_{it}$	-	-	-0.641	-	-	-
			(-0.07)			
$TWOPAR_{it}$	-	-	-	-	5.540	-
					(0.62)	
$LARGEPAR_{it}$	-	-	-	-	0.402	-
					(0.03)	
Time dummy variable (1994)	-45.681	-57.034 *	-48.467	-57.034 *	-47.055	-57.034 *
	(-1.48)	(-1.88)	(-1.56)	(-1.88)	(-1.52)	(-1.88)
R^2	0.055	0.043	0.053	0.043	0.055	0.043
Adjusted R^2	0.036	0.038	0.036	0.038	0.036	0.038
Hausman (p-value)	11.52 (p=0.56)		13.154 (p=0.43)		11.497 (p=0.57)	

Note : N=687; t-values between brackets (except for the Hausman tests where p-values are presented); * significant at 10%, ** significant at 5% and *** significant at 1%.

Before focusing on the strategic debt hypotheses, we cast a quick glance at the control variables. First we refer to the absence of significant coefficients of any of the fragmentation variables. Government fragmentation thus seems to have no impact on debt changes in election years. Given this absence of significant coefficients and given that all other variables are identical between the different tested regressions, the most efficient regressions in the even columns are identical. Turning to the other control variables, we find significant positive coefficients for $\Delta YOUNG_{it}$, ΔOLD_{it} and $\Delta INTEREST_{it}$. For $\Delta YOUNG_{it}$ and ΔOLD_{it} this sign is in line with the expectations. If the percentage of young and elderly in the entire population changes by 1%, debt changes in the same way by

respectively 32.59 and 55.59 euros per capita. For $\Delta INTEREST_{it}$ a negative coefficient was anticipated. While we expected governments to restrain from increasing debt financing when the cost of borrowing increases, the results show that an increase of the borrowing cost (by 1%) results in an increase of debt (per capita of 147.18 euros). Obviously governments do not succeed in reducing debt when costs increase, on the contrary they seem to engage additional debt to finance the increased cost of borrowing. This is in line with the so-called "snowball effect" and shows the perverse effect that high interest rates may have on indebtedness. This effect is also found by Ashworth *et al.* (2005) and Geys (2007). There is no indication that the level of debt, the change of income, the change of unemployment or the government's size evolution affects debt changes in election years. Nor $LEFTMAJ_{it}$ presents a significant coefficient. Finally, the dummy variable for the year 1994 does present a significant coefficient. The negative value of this coefficient suggests that in that year debt increases are less strong.

Focusing on the strategic debt hypotheses, we do not find support for the strategic use of debt in Flemish municipalities. The most efficient estimations in even columns show that governments that do not expect re-election have no significantly different level of debt in election years, as PED_{it} fails to present a significant coefficient. Neither the interaction variable (PED_{it} * $LEFTMAJ_{it}$) is significant. From this results there is no indication that Flemish municipalities that do not expect to get a majority of the votes strategically change debt in election years.

3.4.5 Extension

The findings in the previous section fail to confirm the existence of strategic use of debt in Flemish municipalities. Still, some extended analyses could be done.

First, we test different levels of vote expectations to construct PED_{it}. We should remark that the construct presented above tests whether or not governments with vote expectations below 50% change debt policy in election years. First, this assumes that governments who are confident of staying into office are not expected to change debt

strategically. This seems reasonable. Second, this also assumes a generalisation of all governments with vote expectations below 50% of who we do expect to change debt strategically. Maybe this assumption is too strict. Indeed, despite vote expectations below 50%, their behavior may be mutually divergent. Especially governments with low vote expectations are expected to engage in strategic debt policy. On the contrary, governments with vote expectations only just below 50% may believe they will be able to attract additional votes necessary to get back into office and will not change debt strategically. Then the question is at what level of vote expectations governments without re-election expectations change debt strategically? We rerun the analyse above with a multitude of PED^{x}_{it} dummies that cover the governments with vote-expectations below x-percent. In fact, in Table 17 we reconstruct PED_{it} to test whether governments with vote expectations below 49% (PED^{49}_{it}), below 48% (PED^{48}_{it}),… etc. change debt strategically.[97] This enables us to test if the strategic debt effect is absent in general or if it kicks in at a lower level of vote expectations.

Some remarks on the presentation of the results of this approach in Table 17. First, in column (1) we present the results when taking PED^{50}_{it} into account as a proxy for the probability of electoral defeat. This corresponds (of course) with the results as presented in Table 16, but the reprise of the results allows to compare the results more easily with those when lowering the vote expectations. Second, we do not run regressions for governments with vote expectations below 40% as the Hausman test suggests that random effects are not appropriate anymore below that level.[98] For reasons of comparability we only present random effects results. Third, to provide a general view of the results of these additional analyses in one single table, we only present estimation results of the most efficient regressions (thus leaving out insignificant variables).[99]

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97 These dummy variable gets value 1 if the forecasted vote percentage (V^{f}_{it}) is below 49%, 48%,… etc. (thus $V^{f}_{it}<x\%$) and 0 otherwise

98 Table A13 on p. 209 presents the number of observations for each PED^{x}_{it} operationalisation. The number of observations with $PED^{x}_{it} = 1$ reduces from 195 for PED^{50}_{it} to 32 for PED^{41}_{it}.

99 When an interaction term is significant, the constitutive variables of the interaction model remains included regardless of whether they are significant. Insignificant constitutive variables are shown in *italic*.

Table 17 Estimation results of the debt change function given different levels of vote expectations, using OLS with random effects

Dependent variable : $\Delta Debt_{it}$	(1) PED^{50}_{it}	(2) PED^{49}_{it}	(3) PED^{48}_{it}	(4) PED^{47}_{it}	(5) PED^{46}_{it}	(6) PED^{45}_{it}	(7) PED^{44}_{it}	(8) PED^{43}_{it}	(9) PED^{42}_{it}	(10) PED^{41}_{it}
Intercept	34.481 ***	20.917 **	20.938 **	21.291 **	21.077 **	20.477 **	21.691 **	21.558 **	21.924 **	20.891 **
	(5.20)	(2.21)	(2.22)	(2.27)	(2.25)	(2.18)	(2.30)	(2.29)	(2.33)	(2.24)
PED^{x}_{it}	-	*11.439*	*16.286*	*15.739*	*18.982*	*16.643*	*4.443*	*7.287*	*3.962*	*16.815*
		(1.21)	*(1.65)*	*(1.48)*	*(1.65)*	*(1.30)*	*(0.32)*	*(0.48)*	*(0.22)*	*(0.86)*
PED^{x}_{it} * $LEFTMAJ_{it}$	-	-59.751 **	-55.567 *	-58.297 *	-61.589 *	-91.759 **	-80.002 **	-82.882 **	-79.329 *	-107.182 **
		(-2.29)	(-1.90)	(-1.88)	(-1.96)	(-2.49)	(-2.04)	(-2.08)	(-1.84)	(-2.34)
$LEFTMAJ_{it}$	-	*6.864*	*2.924*	*1.647*	*1.695*	*1.968*	*-0.320*	*-0.208*	*-1.177*	*-0.703*
		(0.53)	*(0.23)*	*(0.13)*	*(0.14)*	*(0.16)*	*(-0.03)*	*(-0.02)*	*(-0.10)*	*(-0.06)*
$DEBT_{it-1}$	-	0.020 *	0.021 *	0.021 *	0.021 *	0.023 **	0.023 **	0.023 **	0.023 **	0.024 **
		(1.80)	(1.82)	(1.85)	(1.88)	(2.00)	(2.01)	(2.02)	(2.00)	(2.12)
ΔNTI_{it}	-	-	-	-	-	-	-	-	-	-
$\Delta YOUNG_{it}$	3259.128 **	3395.893 **	3198.296 **	3263.821 **	3208.123 **	3295.086 **	3228.155 **	3241.853 **	3162.543 **	3179.011 **
	(2.30)	(2.39)	(2.26)	(2.30)	(2.27)	(2.33)	(2.28)	(2.29)	(2.23)	(2.25)
ΔOLD_{it}	5559.006 **	5203.282 **	5145.907 **	5257.696 **	5325.530 **	5280.077 **	4996.167 **	4997.827 **	5098.493 **	5009.259 **
	(2.20)	(2.06)	(2.04)	(2.08)	(2.11)	(2.09)	(1.97)	(1.97)	(2.02)	(1.99)
$\Delta UNEMPL_{it}$	-	-	-	-	-	-	-	-	-	-
ΔPOP_{it}	-	-	-	-	-	-	-	-	-	-
$\Delta INTEREST_{it}$	147.184 ***	142.710 ***	134.103 ***	135.964 ***	133.687 ***	137.024 ***	136.111 ***	136.336 ***	133.473 ***	133.343 ***
	(2.89)	(2.76)	(2.60)	(2.64)	(2.59)	(2.66)	(2.64)	(2.64)	(2.59)	(2.59)
FRAG										
$NPAR_{it}$	-	-	-	-	-	-	-	-	-	-
$NPAR^2_{it}$	-	-	-	-	-	-	-	-	-	-
$ENPAR_{it}$	-	-	-	-	-	-	-	-	-	-
$ENPAR^2_{t}$	-	-	-	-	-	-	-	-	-	-
$TWOPAR_{it}$	-	-	-	-	-	-	-	-	-	-
$LARGEPAR_{it}$	-	-	-	-	-	-	-	-	-	-
Time dummy variable (1994)	-57.034 *	-56.044 *	-52.259 *	-53.145 *	-51.997 *	-52.801 *	-51.980 *	-52.163 *	-51.064 *	-50.92 *
	(-1.88)	(-1.84)	(-1.72)	(-1.75)	(-1.71)	(-1.74)	(-1.71)	(-1.72)	(-1.68)	(-1.68)
R^2	0.043	0.054	0.054	0.053	0.054	0.056	0.053	0.053	0.052	0.055
Adjusted R^2	0.038	0.043	0.042	0.042	0.043	0.045	0.042	0.042	0.041	0.043
Hausman	10.89	11.88	10.99	12.80	11.88	11.09	11.24	11.29	11.39	15.72
	(p=0.54)	(p=0.45)	(p=0.53)	(p=0.38)	(p=0.45)	(p=0.52)	(p=0.50)	(p=0.50)	(p=0.50)	(p=0.20)

Note : N=687; t-values between brackets (except for the Hausman tests where p-values are presented); * significant at 10%, ** significant at 5% and *** significant at 1%.

From Table 17 it is clear that PED^{50}_{it} indeed was chosen arbitrary. The creation of additional dummies for lower vote expectations shows that governments with vote expectations below 49% change debt differently than governments with higher vote expectations. Still this effect cannot be generalised to the PS, AT or Martimort (2001) model. Yet, for all tested operationalisations the PED^{x}_{it} nor the $LEFTMAJ_{it}$ variables are significant, still their interaction terms consequently present significant coefficients and thus strongly suggest that left-wing governments with bad re-election prospects have different slope coefficients. Moreover, the sign of the interaction term is negative, providing evidence that there is a negative impact of leftist governments with vote expectations below the appropriate percentages on the change of debt in election years. This behavior is in line with the PS model, but only for leftist governments not expecting to get into office again. Although it is not linear, the overall trend is that the lower the expected votes, the larger is the impact on debt changes (from 59.75 euros for PED^{49}_{it} to 107.18 euros per capita for PED^{41}_{it}) or thus the stronger the strategic reaction.

If strategic debt policy in line with the PS model is observed for leftist majority governments only, then what can be an explanation for the absence of strategic debt behavior by the other governments? We suggest this could be explained by the consequences of strategic debt behavior on the government's favourite policy if contrary to the expectations the government does return to office.[100] If –as shown in Table 17– a leftist government with bad re-election prospects reduces debt before elections, but unexpectedly stays in office, this debt reduction does not prevent the leftist government to prolong its favourite policy in the next legislature. Indeed, debt reduction before elections creates financial margin to increase expenditures when returning into office. On the contrary, when a rightist government with bad re-election prospects increases debt before elections –as the

[100] As already introduced on p. 41, fiscal policy theory believes that left-wing governments are more in favour of income redistribution and an active state than right-wing governments. This may lead to higher public expenditures (Hibbs, 1977 and Schmidt, 1996) resulting in higher tax rates.

PS model predicts– it will be confronted with negative consequences of its behavior on its favourite policy if it surprisingly regains majority. Indeed, an increase of the debt not only increases future expenditures –by means of reimbursements of the capital and the interest payments– it also foils the financial margin for tax reductions a rightist government is traditionally in favour of. Therefore, leftist governments are more expected to change debt strategically.

With respect to the control variables, the results are comparable to these in Table 16. $DEBT_{it-1}$ presents a significant positive coefficient indicating a positive effect of the level of debt in the year before elections on debt changes in election years. This positive sign may be another indicator of the "snow ball effect" suggesting that high levels of debt become self-reinforcing.

In a second extension we perform an additional test concerning the role of government fragmentation. In section "3.3 Discussion" on p. 89 we already questioned the role of government fragmentation in strategic debt policy. As shown in that paragraph, the expectations are ambiguous. In estimation (V.) on p. 106 some fragmentation variables are introduced. These variables control for different levels of debt changes according to the level of fragmentation. As can be seen in Table 16 on p. 108, there is no significant impact of government fragmentation. Still, this does not necessarily mean that fragmentation has no impact at all on strategic debt behavior. It can play a role in strategic debt behavior too by means of a different reaction of a single party government and of a coalition government confronted with the same probability of electoral defeat. As can be seen from the discussion on p. 88 there are opposing expectations about the role of fragmentation on the strategic use of debt. To test these hypotheses, we rerun our regressions separately for single party governments and for coalition governments. Results are presented in Table 18 in columns (1) to (3) for single party governments and columns (4) to (10) for coalition governments. Some remarks on the presentation of the results. First, when focussing on single party governments, $LEFTMAJ_{it}$ and its interaction term with PED^{50}_{it} and PED^{49}_{it} are

exact collinear. This indicates that all single party governments with a leftist majority have vote expectations below 49%. Indeed, when examining the dataset, the highest vote expectation of a single party government with a leftist majority is 48.92%. This makes it impossible to run the regressions including the test of strategic debt behavior including PED^{50}_{it} or PED^{49}_{it}. Consequently we present results starting with PED^{48}_{it}. Also for single party governments, results are limited to PED^{38}_{it} as there are no single party governments with a leftist majority that have vote expectations below 37%. Second, we do not run regressions for coalition governments with vote expectations below 43% as the Hausman test suggest that random effects are not appropriate anymore below that level. Again we only present random effects results for reasons of comparability. Finally, as in Table 17 we only present estimation results of the most efficient regressions (thus leaving out insignificant variables). [101]

[101] When an interaction term is significant, the constitutive variables of the interaction model remains included regardless of whether they are significant. Insignificant constitutive variables are shown in *italic*.

Table 18 Estimation results of the debt change function given different levels of vote expectations in single party governments, using OLS with random effects

	Single Party Governments (N= 326)			Coalition governments (N=361)						
Dependent variable : $\Delta Debt_{it}$	(1) PED^{50}_{it} - PED^{49}_{it}	(2) PED^{48}_{it}	(3)$PED^{47}_{it} \rightarrow PED^{38}_{it}$	(4) PED^{50}_{it}	(5) PED^{49}_{it}	(6) PED^{48}_{it}	(7) PED^{47}_{it}	(8) PED^{46}_{it}	(9) PED^{45}_{it}	(10) PED^{44}_{it}
Intercept	-	6.046 (0.39)	17.302 (1.21)	31.591 *** (3.43)	30.123 *** (3.13)	31.268 *** (3.24)	31.540 *** (3.28)	33.299 *** (3.65)	32.674 *** (3.42)	33.600 *** (3.51)
PED^{x}_{it}	-	*10.559* *(0.86)*	-	-	*24.243* *(1.35)*	33.638 * (1.76)	*33.872* *(1.59)*	-	*22.706* *(0.874)*	*3.791* *(0.13)*
PED^{x}_{it} * $LEFTMAJ_{it}$	-	-241.10 ** (-2.24)	-	-	-97.284 *** (-2.82)	-73.095 * (-1.74)	-83.422 * (-1.85)	-	-180.921 *** (-2.92)	-220.397 *** (-2.94)
$LEFTMAJ_{it}$	-	207.844 ** (2.06)	-	-	*6.450* *(0.47)*	*-0.490* *(-0.04)*	*-1.346* *(-0.10)*	-	*-0.836* *(-0.06)*	*-2.705* *(-0.21)*
$DEBT_{it-1}$	-	0.031 * (1.70)	0.033 * (1.83)	-	-	-	-	-	-	-
ΔNTI_{it}	-	97.222 * (1.71)	-	-	-	-	-	-	-	-
$\Delta YOUNG_{it}$	-	-	-	3421.232 * (1.95)	3773.462 ** (2.14)	3396.354 * (1.93)	3494.555 ** (1.99)	-	3736.464 ** (2.12)	3750.392 ** (2.13)
ΔOLD_{it}	-	5777.578 * (1.92)	-	-	-	-	-	-	-	-
$\Delta UNEMPL_{it}$	-	-	-	-	-	-	-	-	-	-
ΔPOP_{it}	-	-	-	-	-	-	-	0.005 * (1.78)	-	-
$\Delta INTEREST_{it}$	-	-	-	186.661 *** (2.89)	199.164 ** (3.07)	182.914 *** (2.82)	187.220 *** (2.90)	62.250 *** (4.35)	196.455 *** (3.03)	198.506 *** (3.07)
FRAG										
$NPAR_{it}$	-	-	-	-	-	-	-	-	-	-
$NPAR^2_{it}$	-	-	-	-	-	-	-	-	-	-
$ENPAR_{it}$	-	-	-	-	-	-	-	-	-	-
$ENPAR^2_{t}$	-	-	-	-	-	-	-	-	-	-
$TWOPAR_{it}$	-	-	-	-	-	-	-	-	-	-
$LARGEPAR_{it}$	-	-	-	-	-	-	-	-	-	-
Time dummy variable (1994)	-	38.852 *** (3.12)	-	-75.590 ** (-2.02)	-82.578 ** (-2.21)	-75.962 ** (-2.02)	-77.181 ** (-2.06)	-	-81.319 ** (-2.17)	-83.803 ** (-2.24)
R^2	-	0.086	-	0.060	0.080	0.071	0.070	0.057	0.082	0.085
Adjusted R^2	-	0.066	-	0.052	0.065	0.055	0.055	0.052	0.066	0.070
Hausman	-	-[102]	10.922 (p=0.45)	11.70 (p=0.39)	12.07 (p=0.36)	11.36 (p=0.41)	16.73 (p=0.12)	16.66 (p=0.11)	13.68 (p=0.25)	17.26 (p=0.10)

Note : N=687; t-values between brackets (except for the Hausman tests where p-values are presented); * significant at 10%, ** significant at 5% and *** significant at 1%.

[102] Hausman test is set to zero as cross-section test variance is invalid.

When reviewing the results for single party governments and for coalition governments, we may confirm the idea put forward by Ashworth *et al.* (2006) that parties in a coalition are on average less certain of future power. This may lead them to be more sensitive to the strategic use of debt. Indeed, the results in Table 18 confirm that strategic use of debt is particularly observed by coalition governments.[103] For single party governments, there is no evidence of strategic use of debt when vote expectations are below 47%. These findings are opposite to those for coalition governments. In general the estimations in Table 18 provide evidence of strategic use of debt in coalition governments when vote expectations are below 49%.[104] Except for the PED^{48}_{it} estimation we again only find leftist majority coalition governments to change pre-electoral debt. Comparing the findings for coalition governments in Table 18 with the results from Table 17, absolute values of the interaction term's (PED^{x}_{it} * $LEFTMAJ_{it}$) coefficients are increased, suggesting stronger effects on the change of debt for coalition governments. We thus can conclude that strategic debt behavior is a phenomenon that can be observed especially in fragmented government scenarios. This may be due to the fact that as well as the electoral results, the ensuing coalition negotiations play a role in whether or not the government can continue with the same coalition partners as in the previous term.

In a third extension we discuss a number of robustness tests relative to our crucial variable PED^{x}_{it}. The novelty of this chapter has been that –unlike most previous literature on strategic debt models– we do not rely solely on historical political stability or on ex-post information to estimate the probability of electoral defeat. Nevertheless, we wonder what

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[103] The absence of significant coefficients for PED^{x}_{it}, $LEFTMAJ_{it}$ and their interaction terms result in the same estimation results for each PED^{x}_{it} estimation when lowering the vote expectations below 47%. Therefore the results presented in column (3) count for each level of vote expectations below 47%.

[104] Remark that this is not true for the PED^{46}_{it} estimation. We do not have an idea why the interaction term loses significance at the 46-level, while it regains significance at lower levels of vote expectations.

the results would be if we do rely only on such measurements.[105] Below we re-estimate equation (V.) replacing "our" PED_{it} by two alternatives.[106] First, we introduce ex-post vote share for the incumbents as a proxy for the probability of electoral defeat. We thus exchange the prospects of electoral defeat (PED^{x}_{it}) for the ex-post observation of electoral defeat (EED^{x}_{it}). Again this variable is constructed as a dummy variable and takes value 1 if the percentage of votes is below x percent and 0 otherwise. Results are in Table 19.

[105] Most of the estimates in literature on strategic debt rely on data that goes back more than one term. E.g Grilli *et al.* (1991), Pettersson-Lidbom (2001), Franzese (2001) and Crain & Tollison (1993) take into account the frequency of government changes in the past. Franzese (2001) uses the actual duration of the incumbent's mandate. The setting of Flemish municipalities do not lend itself to suchlike variables that go back more than one term. First, there was the large-scale municipal amalgamation in 1976. This hinders the calculation of a frequency of governments changes with statisfactory variation. Second, local parties in Flemish municipalities frequently change their names or merge (see also footnote 75). Such characteristics make it difficult to calculate the duration of the incumbents' mandate as they may stay in office –and carry on their policy– while they changed the name of the party.

[106] A third alternative is presented in Table A11 on p. 208 in appendix. There PED_{it} is changed by the vote expectations V^{f}_{it} and tests the linear impact of vote expectations on the change of debt. These estimations do not follow from theoretical expectations pronounced in this chapter, but they are added to increase consistency between chapter 3 and chapter 4 where a linear impact of vote expectations on the change of tax rates is expected (see Table 21 on p. 139). No significant coefficents for V^{f}_{it} are found.

Table 19 Estimation results of the debt change function given different levels ex post election results, using OLS with random effects

Dependent variable : $\Delta Debt_{it}$	(1) EED^{50}_{it}	(2) EED^{50}_{it}	(3) EED^{49}_{it}	(4) $EED^{49\rightarrow33}_{it}$
Intercept	26.563 *	34.481 ***	23.167	34.481 ***
	(1.80)	(5.20)	(1.58)	(5.20)
EED^{x}_{it}	-11.663	-	-5.983	-
	(-1.35)		(-0.67)	
$EED^{x}_{it} * LEFTMAJ_{it}$	-27.224	-	-31.622	-
	(-1.16)		(-1.31)	
$LEFTMAJ_{it}$	4.328	-	4.706	-
	(0.31)		(0.343)	
$DEBT_{it-1}$	0.020 *	-	0.020 *	-
	(1.75)		(1.78)	
ΔNTI_{it}	51.045	-	52.543	-
	(1.35)		(1.39)	
$\Delta YOUNG_{it}$	3047.505 **	3259.128 **	3104.462 **	3259.128 **
	(2.15)	(2.30)	(2.19)	(2.30)
ΔOLD_{it}	5428.766 **	5559.006 **	5550.981 **	5559.006 **
	(2.14)	(2.20)	(2.19)	(2.20)
$\Delta UNEMPL_{it}$	87.965	-	75.664	-
	(0.13)		(0.11)	
ΔPOP_{it}	0.003	-	0.003	-
	(1.46)		(1.40)	
$\Delta INTEREST_{it}$	132.138 **	147.184 ***	132.795 **	147.184 ***
	(2.55)	(2.89)	(2.56)	(2.89)
$NPAR_{it}$	-2.390	-	-1.607	-
	(-0.40)		(-0.269)	
Time dummy variable (1994)	-47.470	-57.034 **	-48.387	-57.034 **
	(-1.55)	(-1.88)	(-1.58)	(-1.88)
R^2	0.060	0.043		0.043
Adjusted R^2	0.420	0.038		0.038
Hausman	17.34 (p= 0.14)		17.05 (p=0.15)	

Note : N=687; t-values between brackets (except for the Hausman tests where p-values are presented); * significant at 10%, ** significant at 5% and *** significant at 1%.

Odd columns of Table 19 present results including all variables, while the more efficient regression in which insignificant variables are omitted is even columns. Columns (1) and (2) show the results when governments are expected to change debt strategically when they fail to get a majority of the votes, that is EED^{50}_{it} gets value 1 if the vote percentage is below 50% and 0 otherwise. The results show that both EED^{50}_{it} and its interaction term with $LEFTMAJ_{it}$ fail to present significant variables. Thus there is no indication of strategic debt behavior. The same conclusion results from regressions taking into account lower vote percentages to construct EED^{x}_{it}. We only presented the results for EED^{49}_{it} in columns (3) and (4) while this exercise was repeated for each EED^{x}_{it} with x between 50% and 33% – below 33% there are insufficient number of observations to run the regression. As the most efficient regressions –due to the lack of significant coefficients for EED^{x}_{it} and its interaction term with $LEFTMAJ_{it}$– repeatedly lead to the same results we keep the

presentation of the results to that of EED^{50}_{it} and EED^{49}_{it}. Nevertheless, the results presented in column (4) count for all tested EED^{x}_{it} variants. These results may suggest that the use of ex post vote results as a proxy for the probability of electoral defeat may not be optimal. While the use of vote expectations results in regressions providing evidence of strategic debt behavior for governments with a leftist majority, the crucial variables in the debt change estimation remain insignificant when using ex post vote percentages.

Second, Ashworth *et al.* (2005; 403) consider that "governments with larger electoral margins may find it easier to remain in power after the next election". This would lower the incentive to strategically use debt. Therefore we introduce $SEATMAR_{it}$, which takes into account the seats margin of the government. As in chapter 2 on p. 49, we compute the seats margin as the difference between the percentage of the seats of the government parties in the Council and 50%. The expectation is that higher margins lower the incentive to strategically use debt, so we expect the seats margin to negatively affect the level of debt changes. In Table 20 we introduce $SEATMAR_{it}$ as a proxy for the probability of electoral defeat. In column (1) all coefficients are presented, while in column (2) only significant coefficients are retained.

Table 20 Estimation results of the debt change function given the seat margin of the government, using OLS with random effects

Dependent variable : $\Delta Debt_{it}$	(1)	(2)
Intercept	25.040 *	34.481 ***
	(1.68)	(5.20)
$SEATMAR_{it}$	-33.084	-
	(-0.71)	
$SEATMAR_{it} * LEFTMAJ_{it}$	-120.071	-
	(-0.95)	
$LEFTMAJ_{it}$	11.054	-
	(0.57)	
$DEBT_{it-1}$	0.017	-
	(1.46)	
ΔNTI_{it}	54.766	-
	(1.44)	
$\Delta YOUNG_{it}$	2882.337 **	3259.128 **
	(2.02)	(2.30)
ΔOLD_{it}	5504.764 **	5559.006 **
	(2.16)	(2.20)
$\Delta UNEMPL_{it}$	91.086	-
	(0.13)	
ΔPOP_{it}	0.003	-
	(1.32)	
$\Delta INTEREST_{it}$	126.771 ***	147.184 ***
	(2.43)	(2.89)
$NPAR_{it}$	-0.468	-
	(-0.08)	
Time dummy variable (1994)	-45.314	-57.034 **
	(-1.47)	(-1.88)
R^2	0.054	0.043
Adjusted R^2	0.037	0.038
Hausman	13.80 (p= 0.31)	

Note : N=687; t-values between brackets (except for the Hausman tests where p-values are presented); * significant at 10%, ** significant at 5% and *** significant at 1%.

In line with Ashworth *et al.* (2005) we fail to find evidence of strategic debt behavior. Columns (1) of Table 20 shows that SEATMAR has a negative coefficient, still it is not significant. The results presented in column (2) are similar to those previously found in absence of significant variables representing the probability of electoral defeat and its interaction with $LEFTMAJ_{it}$. The absence of a significant coefficient of SEATMAR may be not that surprising. SEATMAR only measures for the strength of the government, while for vote-function (II.) in Table 15 on p. 98 evidence is shown that votes (and thus also vote expectations) depend not only on the strength of the government (as measured by V_{it-6} in the vote-function), but also on other variables. The absence of evidence of strategic debt behavior in Table 20 thus could be awarded to the fact that SEATMAR is only a rough estimate of the government's re-election prospects.

3.5 Conclusion

This chapter discusses the literature on strategic use of debt models and empirically tests them on a dataset of Flemish municipalities. In general the literature on strategic debt models shows that the evidence is mixed and we suggest that the lack of an undisputed measure to estimate the probability of electoral defeat obstructs the formulation of a general consensus on this matter. Most of these measures are based on historical political stability information, which ignores the fact that incumbents have to try to estimate what voters have in mind in the voting booth when estimating the government's probability of electoral defeat. As Baleiras (1997; 202) explicitly states "this probability depends on the electorate's assessment of the incumbent's performance while in office". They thus consider not only historical, but also tax, economic and political variables. Therefore we introduce vote functions to estimate the prospects of electoral defeat. For the purpose of this chapter the vote function of Vermeir & Heyndels (2006) is used to construct a good proxy for the prospects of electoral defeat. Our main results show that the strategic use of debt in Flemish municipalities cannot be undisputedly confirmed. First, strategic debt cannot be stated for all governments with vote expectations below 50%. Still it can be observed for governments with expected vote percentages below 49%. Second, strategic debt changes can only be stated for leftist governments without re-election prospects, while the seminal models also formulate expectations about governments with opposing ideological characteristics. It thus seems that in Flemish municipalities leftist majority governments without re-election prospects are sensitive to strategic debt behavior, while this is not true for its ideological counterparts. Probably the consequences of debt changes on its own policy when a government surprisingly returns to office could explain these findings. Third, our analyses show that strategic debt behavior is more to be expected in the case of coalition governments. When running separate analyses for single party governments and for coalition governments, we find only significant strategic debt coefficients for the latter. This may be due to the fact that coalition governments have both to win the elections and also to survive the ensuing coalition negotiations. This increases

their uncertainty of returning to office and as a consequence their motivation to strategically issue debt. To check the robustness of the general results, the strategic use of debt analysis was reran using ex post election results and the seats margin (instead of the results from the vote function) as a proxy for the probability of electoral defeat. None of them allow to confirm the presence of strategic debt behavior. This may suggest that a vote function is a more reliable instrument for estimating the probability of electoral defeat than the used alternative measures.

Chapter 4 : Pre-electoral tax rate changes

Applied to tax rates, political budget cycle theory predicts that incumbents will reduce tax rates in the build-up to elections to increase their popularity. In chapter 2 the (joint) empirical analysis revealed the presence of an electoral cycle for the local income tax rate. In chapter 3 evidence of strategic debt behavior in election years was presented. Strategic debt changes may result from pre-electoral tax rate changes. Therefore we concentrate in this chapter we on tax rate changes in election years and try to find out whether these can be explained using a PBC or a strategic debt approach.

4.1 Introduction

This chapter deals with the question whether the incumbent government's expectation of the electoral result is linked to their tax policy in the election year. We believe it is and refer to two important literatures supporting this view : the budget cycles literature and the literature on strategic debt models.

The study of politicians' behavior at election time is the central focus of electoral cycle models (Nordhaus, 1975; Tufte, 1978; Hibbs, 1977 and Rogoff, 1990). The findings of these are of particular importance for the analysis conducted in this chapter, for we are investigating the effect of electoral expectations on the local tax policy of Flemish municipalities. Next to the electoral cycle literature, we rely on insights from strategic debt models (Persson & Svensson, 1989 and Alesina & Tabellini, 1990). As shown in the previous chapter, the perceived probability of defeat might be a key parameter in explaining policy choices preceding elections. In this chapter we test whether the expected vote percentage explains local tax rate changes before elections. The calculation of the expected vote percentage was already partly worked out in the previous chapter (see section 3.4.1 starting on p. 91).

In this chapter, we focus on tax rate policy, which is the dependent variable in only a limited number of electoral cycle studies. Most of the time expenditures, deficits or debt are the fiscal instruments under study. Yet scholars generally agree that incumbents prefer to manipulate those instruments most visible to their electorates. As tax rate changes are highly visible (cf. Mikesell, 1978), the dependent variables in this study represent tax rate changes of the local income and local property taxes in the election year.

To test whether vote expectations explain fiscal policy choices, we use panel data covering three elections (1988, 1994, 2000) for 294 Flemish local governments. This setting is likely to be sensitive to political business cycles and strategic debt policy, both because election times are fixed and because incumbents can be indefinitely re-elected (i.e. there are no binding term limits), giving them the opportunity to carefully prepare their re-election strategy. As such, opportunistic and strategic policies become more tempting.[107]

In this chapter we build on the vote expectations generated from equation (II.) on p. 94. Next, a SUR model is developed to test whether changes in the local income tax rate and the local property tax rate in election years depend on the government's vote expectations. Besides the vote expectation variable(s), we introduce variables representing scale, budgetary position, government fragmentation, the government's ideological characteristics and demand effects. The results indicate that the expected percentage of votes is related to the magnitude of the pre-electoral tax rate changes in the local income tax, but not to those in the local property tax.

[107] We are grateful to an anonymous referee who suggested that local incumbents could also reduce tax rates to get an advantage on another political scene if they are allowed to compete at the same time for multiple positions, whatever their chance of winning the next local election. We think that in our setting such motivations are less likely to play a significant role because local elections do not coincide with elections at higher government levels.

The remainder of the chapter is organised as follows. Section 4.2 of this chapter discusses the relevant literature. Section 4.3 formulates our research question and hypothesis. Section 4.4 presents the dataset, the model and the results of the empirical analysis. Finally some concluding comments are given in section 4.5.

4.2 The literature

The propositions made in this chapter are related to a number of well-established models in the fiscal policy literature. In this section we briefly discuss the contributions of political business and budget cycle models and (again) strategic debt models.

4.2.1 Political business/budget cycles

Political business cycle models expect incumbents to engage opportunistically in specific policies when facing elections. Originally the models focused on incumbents' stimulation of the economy by manipulating macro-economic policy (political *business* cycles). By taking employment or wealth inducing measures, the government's popularity, and as a consequence the likelihood of its staying in office, was expected to increase. However, Drazen (2000) concludes that models based on manipulating the economy through monetary policy are unconvincing both theoretically and empirically. Studies focusing on fiscal policy (political *budget* cycles – PBC) are much more robust. Empirical evidence supports the idea that lowering taxes, increasing expenditure or raising grants before elections raises the government's chance of re-election. We refer to Franzese (2002) or Drazen (2000) for an overview of the theory of PBC.

Numerous empirical contributions have tested the propositions resulting from PBC models, but the evidence is mixed. Franzese (2002) observes that support for electoral cycles models is less robust in developed countries than in developing democracies. The particular context (political, economic, institutional, structural as well as strategic) in which incumbents operate also determines their incentives to 'electioneer'. Finally, evidence on

the effects of policy adjustments (i.e. budgets, expenditures, taxes, investments) on the voter's decision-making is relatively well-established. The effects of pre-electoral shifts in real outcomes (i.e. gross domestic product, inflation or unemployment) are at best ambiguous.[108]

In this chapter we study pre-electoral tax policy in a local context. The setting of local governments excludes monetary policy as an instrument for pre-electoral opportunistic behavior because this is the hands of the federal government exclusively, which, through its central bank, is represented in the ECB decision-making bodies. At the local level, it is changes in fiscal policy that are expected to have a more significant impact on voters' behavior. Drazen (2000), noting that voters have imperfect information about an incumbent's competence, argues that fiscal policy can clearly signal the government's competence to the electorate. More specifically we will focus on the most visible part of the local fiscal policy, namely rate changes of important local taxes. One could argue that reducing tax rates before elections implies naïve voters. Early models, following Nordhaus (1975), did indeed assume naïve voters with adaptive expectations, in which voters did not learn from previous election periods and thus could be fooled over and over again. But later models developed by Rogoff & Sibert (1988) and Rogoff (1990) positioned voters with rational expectations. Rational voters could perceive a pre-electoral tax reduction as an attempt to fool them and consequently punish the government by voting against it. These later models assume that there is imperfect information about an incumbent's competence and that expansionary policy before election is seen as an indicator of high competence (Alesina *et al.*, 1992). In this chapter, we follow Drazen (2000) and introduce tax rate changes as the dependent variable.

[108] It is not difficult to see that it is for incumbents much easier to manipulate policy instruments than macroeconomic outcomes (e.g. GDP, inflation or unemployment). Governments are able control their own policy instruments whereas they can only hope to have some indirect impact on the economy (Blais & Nadeau, 1992, 390).

4.2.2 Strategic debt models

The strategic debt models most referred to are those of Persson & Svensson (1989) and Alesina & Tabellini (1990). Both emphasize strategic considerations concerning a government's debt policy but from different points of view. While Persson & Svensson (1989) focus on the level of spending, Alesina & Tabellini (1990) concentrate on the composition of government spending.

Persson & Svensson (1989) argue that politicians follow their own voters' preferences concerning the size of government. Incumbents are thus acting as Pigouvian agents. Accordingly, Conservatives are expected to be reluctant to indulge in 'bad public finance'. This expectation, however, is confounded by the Reagan-governments in the U.S., which illustrated that a massive build up of debts is quite conceivable under a Conservative government. Following Persson & Svensson (1989), it might have a strategic purpose. Increasing deficits and debt levels is seen as a means of restricting the expansionary policies of the next government. Consequently, in the case of more liberal governments, the level of debt will not increase in election years. This kind of strategic behavior is only to be expected if the current government expects to be voted out of office.

According to Alesina & Tabellini (1990) both right-wing and left-wing governments will allow higher levels of debt if they suspect they will not be re-elected, as long as the degree of political polarization is sufficiently large. In their model, governments differ with respect to their preferences concerning the type of government spending. When the government knows it will be replaced by a government in favour of policies quite distinct from its own, it is expected to increasingly invest in those public goods that matter most to its own electorate. As the authors express it: "by leaving the debt to the future, today's government can force its successor to "pay the bills" and spend less on the public good that is worth nothing to today's government" (Alesina & Tabellini, 1990; 409).

For a more detailed discussion on the strategic debt models, see section 3.2 starting on p. 82.

4.3 Discussion

In this section we discuss the main contributions of this chapter to the literature.

First, this chapter contributes to the relatively limited empirical evidence concerning incumbents' strategic behavior at the *local government* level. We are only aware of the Pettersson-Lidbom-study (2001), which analyses the strategic debt accumulation of Swedish local governments. The same goes for the PBC. We can refer to e.g. Ashworth *et al.* (2005 & 2006), Binet & Pentecôte (2004), Brender (2003), Drazen & Eslava (2005), Geys (2007), Solé Ollé (2003) and Veiga & Veiga (2007), still country level data dominate in PBC literature, despite the fact that a local-level context offers a number of advantages, as pointed out in section 1.4 on p. 31.[109]

Secondly, contrary to previous research we do not take the viewpoint of individual politicians. Rather we focus on the *position of the seated majority*. We investigate whether expectations about the continuation of the current government might be a decisive factor in the process.

Thirdly, Persson & Svensson (1989; 325) propose that governments will engage in deficit-spending or accumulate debt when "the government knows that it will be replaced". In this chapter, we mitigate this assumption, arguing that *uncertainty about getting re-elected* is already sufficient motivation to act strategically.

Fourthly, we measure the probability of staying in office in a different way. In the Pettersson-Libom (2001) study, post election outcomes were used as a proxy for the probability of electoral defeat. Next, the votes were instrumented by the frequency of government changes over the last 7 legislatures. In this chapter we also test post election

[109] See footnote 36 on p. 44 for more details on these papers.

outcome, but in addition we rely on the result of the estimation of the specific vote function as developed in the previous chapter.[110] We assume that the expected votes are dependent on the current popularity of the government, on its fiscal policy and on economic conditions.

Finally, this chapter investigates tax rate changes. Tax rate changes as such are rarely the dependent variable in PBC research.[111] We are only acquainted with the research of Mikesell (1978), Nelson (2000) and Binet & Pentecôte (2004).[112] The taxes we consider are surcharge taxes, the rates of which in Flanders are set by the local municipalities.

4.4 Empirical analysis

In this section we test whether the prospects of electoral outcome are decisive in pre-electoral tax policy. Section 4.4.1 outlines our dependent variable. Section 4.4.2 presents the methodology and the empirical model. Section 4.4.3 discusses the empirical results, while some extensions are presented in section 4.4.4.

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110 We refer to equation (II.) in section 3.4.1 on p. 94.

111 See also footnote 23 on p. 36.

112 Mikesell (1978) shows that tax rate cuts in American states were concentrated in the latter years of the electoral cycle in the period 1960-1977. Tax rate increases, on the other hand, are more likely to occur in the year immediately after election years than in election years. Working on a similar but larger dataset (1946-1993), Nelson (2000) affirms the occurrence of tax rate increases, while he finds little evidence that U.S. state politicians strategically time tax rate cuts to occur around election periods. Binet & Pentecôte (2004) show that tax rate reductions are used for election-motivated tax manipulation in French municipalities.

4.4.1 Dependent variable

In this chapter we focus on the local tax rate changes (ΔTR_{it}). We prefer to study tax rate changes to other variables representing the balance or level of indebtedness.[113] We agree with Wagner (1971) & Mikesell (1978) that tax rate changes get public attention, legislative debate and voter attention. Other modifications of the tax laws (such as tax base changes and additional exemptions) tend to be less visible and taxpayers sometimes have poor understanding of what exactly has changed (Nelson, 2000). According to Tufte (1978), especially highly visible actions that generate economic benefits for a large number of voters are central to the electioneering process.

We will formulate a model that simultaneously estimates changes in the rates of the local income tax ($\Delta LITR_{it}$) and the local property tax ($\Delta LPTR_{it}$). The tax rate changes in our model are measured as the year-to-year change in election years t compared to pre-electoral years t-1. Table A14 on p. 210 presents the descriptive statistics of $\Delta LITR_{it}$ and $\Delta LPTR_{it}$ and shows that $\Delta LITR_{it}$ has no positive values. None of the Flemish municipalities under review increased LITR in election years. $\Delta LPTR_{it}$ has some positive values. More detailed analyses of $\Delta LPTR_{it}$ (not shown) indicate that only four observations have a positive $\Delta LPTR_{it}$ value.[114] On average LITR and LPTR are cut by, respectively, 0.08% and 3.86 centimes in election years.

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[113] Blais & Nadeau (1992) show that spending is increased in election years in Canadian provinces. Alesina (1988) finds a significant election year increase in net transfer over GNP for the U.S. Shi & Svensson (2003) consider a panel data set of 91 countries and find that in an election year the government surplus falls significantly. Brender & Drazen (2005) look for budget cycles using expenditures, transfers and the balance in a large cross-section of countries. Geys' (2007) analysis of local public debt data for 296 Flemish municipalities provides empirical support for opportunistic policy cycles.

[114] Only 1 (Zoersel), 2 (Rotselaar & Maasmechelen) and 1 (Spiere Helkijn) municipalities present positive ΔLPT_{it} values in, respectively, 1988, 1994 and 2000.

4.4.2 Empirical model

In this section we present the empirical model. We rely on a Seemingly Unrelated Regression (SUR) approach to find out whether or not pre-electoral tax policy depends on the government's prospects of re-election.[115]

From the PBC-perspective, we expect governments to lower tax rates when they doubt their ability to rally the support needed for re-election. Governments fearing an electoral outcome just short of a majority position are expected to reduce tax rates in an attempt to make up the difference. However, even governments expecting to gain very few votes at all might as well do the same; they know this will not convince a great many citizens to vote for them, but at least it will strategically trim the next government's resources. On the other hand, local governments who are confident of staying in office probably do not care all that much about the impact of votes by changing taxes (Solé Ollé, 2003). They may be expected to change taxes when this corresponds to their ideological programme or to their financial needs.

We thus expect the government's decision to change tax rates in election years to be dependent on their expectations of getting into office again. Therefore estimation (VI.) explains tax rate changes in election years (ΔTR_{it}) as a function of the government's electoral prospects (EP_{it}) and additionally a vector of variables affecting fiscal policy (Y_{it-1}). More formally,

(VI.) $\Delta TR_{it} = \alpha_1 + \alpha_2 EP_{it} + \alpha_3 Y_{it-1} + u_{it}$;

where i = 1,..., N; t = election years 1988, 1994 and 2000

[115] See the next section 4.4.3 on p. 136 for a motivation on SUR approach.

To properly compute the government's electoral prospects, we should be able to compute its actual expectations. But unavailability of such data for a large sample over a long period forces us to find a good proxy. This is, in fact, the same issue faced in Chapter 3, when estimating the probability of electoral defeat. For the purpose of this chapter we again build on the on p. 100 generated *forecasted values* of the vote percentage (V^f_{it}).[116] As explained there, for each observation the forecasted value of the vote percentage is calculated by applying the coefficients of the vote function as estimated in Table 15 on p. 98 on the one year lagged values of the explanatory variables to take into account that tax rates of election years t have to be decided before December 31 of the year before elections. These forecasted values may be a good proxy for the government's prospects of the electoral result. Therefore we replace EP_{it} in equation (VI.) by V^f_{it} and expect it to have a positive coefficient.[117]

In Chapter 3 we showed that strategic debt behavior differs from the ideological characteristics of the government. Therefore an interaction variable was introduced that links the vote expectations of the government with the government's ideological characteristics. As we expect strategic behavior to be a possible explanation for tax rate changes too, an interaction between the expected votes and an ideological variable $IDEO_{it-1}$ is introduced. We fall back on the analysis of Chapter 3 to test the interaction effect in three ways. We revert to the dummy variable $LEFTMAJ_{it-1}$ (see p. 101), to the Ideological Complexion of local Governments (ICG_{it-1}) as constructed by Kontopoulos & Perotti (1999) and to a dummy variable ($LEFTGOV_{it-1}$) that is gathered from this ICG_{it-1} value (see footnote 92 on p. 102). Including this interaction extends equation (VI.) to :

$$\text{(VII.)} \quad \Delta TR_{it} = \alpha_1 + \alpha_2 V^f_{it} + \alpha_3 V^f_{it} * IDEO_{it-1} + \alpha_4 IDEO_{it-1} + Y_{it-1} + u_{it};$$

where : i = 1,..., N; t = election years

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116 For more details on the calculation of V^f_{it}, we refer to the previous chapter (see section 3.4.1 starting on p. 91).

117 Analogoulsly to the previous chapter, we also test the impact of vote expectations on pre-electoral tax rate changes using the dummy variable variants as introduced in section 3.4.5 on p. 109. Again we also use ex-post election results as a robustness check. Results are presented in section 4.4.4 on p. 141.

Additionally a vector of variables, represented by Y_{it-1} in equation (VI.), is introduced to control for other variables affecting tax rate changes. Most of these variables explain the level or the change of fiscal and financial variables in the year t-1. As in chapter 2, see p. 53, this lag is introduced because tax rates are set ex ante; that is, they are fixed in the autumn of the previous year. Tax rates cannot be changed during the election year t.[118]

The decision to reduce tax rates is likely to be dependent on the financial health of the government. $BALANCE_{it-1}$ controls for the surplus (positive) or deficit (negative) of the financial account in the year before elections. We expect municipalities facing a surplus in the previous year to decide more easily to transfer this to its taxpayers through tax rate cuts.[119] A negative value is thus expected. Next to the deficit, we introduce $DEBT_{it-1}$, which represents the debt per capita in pre-election years. As governments with low levels of debt are more in a position to reduce tax rates, we expect a positive value. Also the level of tax rate in year t-1 is introduced ($LITR_{it-1}$ and $LPTR_{it-1}$). High tax rates in year t-1 allow for more leniency in reducing tax rates in year t, while this is less possible for governments with low tax rates. Thus lagged tax rates might have an effect on changes in tax rates. A negative coefficient is anticipated. We add a variable to control for tax base changes ($\Delta TBASE_{it-1}$) in the pre-electoral year. We run simultaneously two equations (one for each tax rate) and therefore we take changes of the specific tax base into consideration. For the local income tax, $\Delta TBASE_{it-1}$ measures the change of the revenue per capita of one percent local income tax in year t-1 compared to year t-2. For the local property tax, $\Delta TBASE_{it-1}$ captures the change of the revenue per capita of one percent (this equals 100 opc.) local property tax for the same time interval.[120] Again negative coefficients are expected, indicating that increases in the tax base give governments more opportunities to lower the local tax burden. Also changes in the grant revenue may have an effect on tax rate policy. Therefore $\Delta GRANT_{it}$ is introduced and is defined as the year-to-year change of the

[118] For more details on the endorsement of the local tax rates, we refer to section 1.2.4 on p. 26.

[119] Contrariwise, a deficit in a previous year could be financed by raising taxes in the year thereafter.

[120] TBASE was already introduced on p. 52 when estimating the tax rates. Some more information on the calculation of TBASE is given in footnote 45 on p. 53.

unconditional grants per capita. In the presence of grant illusion we expect a positive sign. Indeed, higher grants may obscure the real tax price of public goods and it may have a positive impact on the demand for public goods and thus on tax rates (to finance this increased demand). If grants on the contrary measure the availability of alternative revenue sources, a negative sign is expected. A priori the sign thus unknown. Still we already know from the results of chapter 2 (see p. 73) that the impact of grants on tax rates is unequal for the different tax rates.

As in Chapters 2 and 3 (see respectively p. 52 and p. 104) we control for the impact of demographic and socio-economic variables on the tax rate changes. In chapter 2 we introduced demographic and socio-economic variables in the tax rate estimations as they may reflect the needs for public services. Changes in those variables may lead to changes in the demand for public expenditures and have an effect on the tax rates. Therefore we introduce the changes in the proportion of young inhabitants ($\Delta YOUNG_{it-1}$), changes in the proportion of elderly inhabitants (ΔOLD_{it-1}), changes in the unemployment rate ($\Delta UNEMPL_{it-1}$) and changes in the number of inhabitants (ΔPOP_{it-1}). These variables are the year-on-year change of the percentage of inhabitants that are, respectively, below 20, over 64 and unemployed and the year-on-year change of the number of inhabitants. We expect positive coefficients.

The role of political characteristics in public policy, and fiscal policy in particular, is a contentious issue. Besides its impact on strategic behavior taken into account with the interaction term ($V^f_{it} * IDEO_{it-1}$), we may also expect a marginal effect of ideology on tax rate changes. Generally, left-wing governments are more in favour of income redistribution and an active state than right-wing governments. Left-wing governments thus prefer higher public expenditure. As a decrease in tax rates reduces a government's revenues (and thus its ability to spend), we may expect leftist governments to be less in favour of tax rate reductions than rightist governments. We thus expect positive coefficients for dummy variables representing leftist majorities ($LEFTMAJ_{it-1}$) or leftist governments ($LEFTGOV_{it-1}$) or a

negative coefficient when the position of the government is determined by the Ideological Complexion of the Government variable (ICG_{it-1}). Second, we take into account the Weak Government Hypothesis (Roubini & Sachs, 1989a, 1989b), which states that weaker –i.e. more fragmented– governments tend to follow less restrictive fiscal policies and are thus expected to have less freedom to reduce taxes before elections. To do this, we introduce $FRAG_{it-1}$ that –as in previous chapters, see respectively p. 48 and p. 105– is operationalised in different ways. First we add the number of parties of the current government ($NPAR_{it-1}$) to measure the effect of fragmentation. As in chapter 2, but also in Ashworth *et al.* (2005 & 2006), Geys (2007) and Goeminne *et al.* (2008) a non-linear effect of government fragmentation on local government's fiscal decision-making is stated, we then test a non linear specification too, adding a squared term of $NPAR_{it-1}$.[121] We also take into account size inequalities to pay attention to the importance of the various parties in the decision process and therefore introduce alternatively the effective number of government parties ($ENPAR_{it-1}$) as employed by Ashworth *et al.* (2005 & 2006) before. Again we also introduce its squared term to test possible non-linearities. Another operationalisation to test for non-linearities is the introduction of dummy variables $TWOPAR_{it-1}$ and $LARGEPAR_{it-1}$ for governments consisting of, respectively two and at least three parties –with single party governments as the remaining category.

Finally, dummies (Y_{1994} and Y_{2000}) are included to control for year-specific effects.

[121] See Table 6 on p. 59.

Replacing Y_{it-1} in equation (VI.) with these control variables and ΔTRC_{it} with of $\Delta LITR_{it}$ and $\Delta LPTR_{it}$, we estimate the following system of equations[122]:

$$\begin{aligned}(VIII.)\quad \Delta LITR_{it} = {} & \alpha_1 + \alpha_2\, V^f_{it} + \alpha_3\, V^f_{it} * IDEO_{it-1} + \alpha_4\, IDEO_{it-1} + \alpha_5\, BALANCE_{it-1} \\ & + \alpha_6\, DEBT_{it-1} + \alpha_7\, LITR_{it-1} + \alpha_8\, \Delta TBASE_{it-1} + \alpha_9\, \Delta GRANT_{it} \\ & + \alpha_{10}\, \Delta YOUNG_{it-1} + \alpha_{11}\, \Delta OLD_{it-1} + \alpha_{12}\, \Delta UNEMPL_{it-1} + \alpha_{13}\, \Delta POP_{it-1} \\ & + \alpha_{14} FRAG_{it-1} + \alpha_{15} Y_{1994} + \alpha_{16} Y_{2000} + u_{it} \\ \Delta LIPR_{it} = {} & \beta_1 + \beta_2\, V^f_{it} + \beta_3\, V^f_{it} * IDEO_{it-1} + \beta_4\, IDEO_{it-1} + \beta_5\, BALANCE_{it-1} \\ & + \beta_6\, DEBT_{it-1} + \beta_7\, LPTR_{it-1} + \beta_8\, \Delta TBASE_{it-1} + \beta_9\, \Delta GRANT_{it} \\ & + \beta_{10}\, \Delta YOUNG_{it-1} + \beta_{11}\, \Delta OLD_{it-1} + \beta_{12}\, \Delta UNEMPL_{it-1} + \beta_{13}\, \Delta POP_{it-1} \\ & + \beta_{14} FRAG_{it-1} + \beta_{15} Y_{1994} + \beta_{16} Y_{2000} + v_{it}\end{aligned}$$

where i = 1,..., N; t = election years 1988, 1994 and 2000

4.4.3 Methodology & results

The results presented below are obtained from models estimated by applying Seemingly Unrelated Regression (SUR) –also known as the multivariate regression or Zellner's method. Given that both tax rates are decided at the same time by the same government, it is not unlikely that unconsidered factors that influence the error terms of the ΔLITR estimation also influence those of the ΔLPTR estimation (and vice versa). The error structures may thus be linked to each other. Ignoring this contemporaneous correlation and estimating both estimations separately could lead to inefficient coefficient estimates. Under these circumstances the use of the SUR technique is recommended (Wooldridge, 2002). In a SUR model, both equations are estimated simultaneously with a generalized least squares (GLS) estimator, thus accounting for contemporaneous correlation in the errors across equations. The data cover 294 of the 308 Flemish municipalities and three election periods.[123]

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[122] Descriptive statistics of all explanatory variables are shown in Table A14 in appendix on p. 210.

[123] Our dataset of the tax rate change estimations builds on the dataset we used to re-estimate Vermeir & Heyndels' (2006) vote-function (see estimation (II.) in section 3.4.1 on p. 94). For remarks on the composition of that dataset, also see footnote 75.

Pairwise correlations indicate that the interaction terms (V^{f}_{it} * $IDEO_{it-1}$) are highly correlated with the variables measuring the main effects.[124] When including both the interaction and the main variables in the model, this may indeed increase multicollinearity leading to an increase of the size of the standard errors that makes it less likely that the coefficient on the interaction term will be significant. Some scholars suggested that high multicollinearity can be solved by centering the main variables when calculating the interaction term (see Jaccard & Turrisi, 2003; 28). Other scholars (see e.g. Brambor *et al.*, 2006 or Kam & Franzese, 2003) propose that centering alters nothing important statistically and nothing at all substantively. When introducing interaction terms, multicollinearity arises because there is too little information in the data. The technique of centering does not provide more accurate data, it thus not solves problems of multicollinearity.[125] Moreover, Brambor *et al.* (2006; 70) suggest that problems associated with multicollinearity are exaggerated in the context of multiplicative interaction model and that as long as there is no perfect multicollinearity all of the constitutive terms should be included. Here we follow Brambor *et al.* (2006) and keep all interaction and main variables in the model.

In the previous section alternatives are introduced for measuring the government's prospects of the electoral result, for taking into account the ideological characteristics of the government and for measuring the effect of government fragmentation. Table 21 presents the results of the estimations when using V^{f}_{it} as a proxy for the government's prospects of the electoral result, employing $NPAR_{it-1}$ as fragmentation variable and ICG_{it-1} as ideological variable. In Table A16 in appendix on p. 211 the analyse as presented in Table 21 is repeated using different fragmentation operationalisations. None of them

[124] The correlation coefficients are over the suggested threshold of $|r|>0.80$ (see Gujarati, 2003; 359). See Table A15 in appendix on p. 210.

[125] We refer to Brambor *et al.* (2006) for the algebraic proof.

present significant coefficients for the fragmentation variables.[126] Therefore, except for Table 21 fragmentation effects are removed from the presented results.[127] In this section we present the results using ICG_{it-1} as ideological variable. The use of alternative ideological variables $LEFTMAJ_{it-1}$ and $LEFTGOV_{it-1}$ do not result in better results as can be seen from Table A17 on p. 213 in appendix. In section 4.4.4 on p. 141 alternatives for V^{f}_{it} are tested.

In this and next section, tables present in columns (1) and (2) estimations including all variables tested, while in columns (3) and (4) insignificant variables are omitted. Remark that when an interaction term is significant, the constitutive variables of the interaction term remain included regardless of whether they are significant. Insignificant constitutive variables are shown in *italic*. Wald tests are performed and reject the null hypotheses that all slope coefficients of our analyses are equal to zero.

[126] Table A16 presents in columns (1) to (8) regressions with all variabels. None of the fragmentation variables is significant. The most efficient regressions in columns (9) and (10) count for all tested fragmentation operationalisations and correspond to the results presented in columns (3) and (4) of Table 21.

[127] Remark that for each analyse the impact of fragmentation is tested. Still we abstain from presenting the results including the different operationalisations as significant coefficients fail to appear.

Table 21 SUR estimation results of the tax rate change functions using the expected vote percentage

Dependent variable	(1) $\Delta LITR_{it}$	(2) $\Delta LPTR_{it}$	(3) $\Delta LITR_{it}$	(4) $\Delta LPTR_{it}$
V^f_{it}	0.029 **	0.926	0.023 **	-
	(2.57)	(1.00)	(2.18)	
$V^f_{it} * ICG_{it-1}$	-0.005 **	-0.171	-0.004 *	-
	(-2.28)	(-0.93)	(-1.96)	
ICG_{it-1}	0.286 **	10.586	0.248 **	-
	(2.37)	(1.05)	(2.11)	
$BALANCE_{it-1}$	-0.001 **	-0.011	-0.001 *	-
	(-2.28)	(-0.58)	(-1.90)	
$DEBT_{it-1}$	-3.87E^{-05}	0.001	-	-
	(-1.11)	(0.38)		
$LITR_{it-1}$	-0.018	-	-0.023 *	-
	(-1.24)		(-1.69)	
$LPTR_{it-1}$	-	-0.008 **	-	-0.009 *
		(-2.14)		(-2.45)
$\Delta TBASE_{it-1}$	0.045 *	2.788	-	-
	(1.76)	(1.21)		
$\Delta GRANT_{it}$	-0.002	-1.200 ***	-	-1.190 ***
	(-0.45)	(-2.96)		(-3.04)
$\Delta YOUNG_{it-1}$	-1.179	-215.081	-	-
	(-0.39)	(-0.85)		
ΔOLD_{it-1}	4.525	497.450 *	-	510.221 **
	(1.40)	(1.84)		(2.20)
$\Delta UNEMPL_{it-1}$	-2.332	-13.056	-	-
	(-1.52)	(-0.10)		
ΔPOP_{it-1}	8.63E^{-05}	-0.001	14.00E^{-05} **	-
	(1.29)	(-0.19)	(2.26)	
$NPAR_{it-1}$	-0.083	-2.627	-	-
	(-1.18)	(-0.46)		
$NPAR^2_{it-1}$	0.016	0.850	-	-
	(0.93)	(0.61)		
Y_{1994}	0.210 ***	17.280 ***	0.154 ***	17.556 ***
	(4.97)	(4.84)	(5.55)	(5.53)
Y_{2000}	0.231 ***	17.847 ***	0.187 ***	17.074 ***
	(6.11)	(5.43)	(7.05)	(2.28)
Intercept	-1.674 ***	-65.628	-1.406 **	-7.554 *
	(-2.67)	(-1.28)	(-2.35)	(-1.77)
R^2	0.124	0.073	0.114	0.065
Adjusted R^2	0.103	0.051	0.103	0.058
Wald F statistic (p-value)	206.37 (p<0.01)		187.95 (p<0.01)	

Note : N=688; Values in parentheses are t-values (except for Wald-test, where p-values are presented); * significant at 10%, ** at 5% and *** at 1%. Wald statistic has a Chi² distribution with R degrees of freedom (R being the number of estimated parameters).

In terms of R^2, the model performs best when estimating the local income tax rate changes. Our model explains about 11% of the variance of the pre-electoral local income tax rate changes. For the local property tax rate changes, the R^2s vary around 6%.

The results in Table 21 show that the vote expectations (V^f_{it}) have an impact on $\Delta LITR_{it}$ but not on $\Delta LPTR_{it}$. The finding that pre-electoral changes in LITR can be explained by the government's vote expectations, while this is not true for LPTR, might indicate that LIT is more electorally costly than LPT. This is in line with the findings in chapter 3 on p. 99 where the results of the vote function provide evidence that LIT is electorally costly.

The results of the present chapter strengthens the finding that LIT is more electorally costly than LPT. In that case, governments may consider LPT a constant revenue source to finance local public services, which is not unlikely as the tax base is immobile.

We continue the discussion of the results from the local income tax rate change estimation. As mentioned before V^f_{it} significantly affects $\Delta LITR_{it}$ and in the expected direction. The awaited positive sign is perceived. This suggests that a low percentage of expected votes goes together with strong local income tax rate reductions. Still, to interpret the marginal effect of (V^f_{it}) on $\Delta LITR_{it}$ correctly, we should be aware that in this interaction model, the conditioning variable ICG_{it-1} is a continuous variable that for none of the observations is zero. The traditional interpretation of the marginal effect of the constitutive independent variable (V^f_{it}) on the dependent variable ($\Delta LITR_{it}$) when the conditioning variable (ICG_{it-1}) is zero thus is insufficient (Brambor *et al.*, 2006). Indeed, the effect of V^f_{it} on $\Delta LITR_{it}$ should be calculated as ($\alpha_2 + \alpha_3 ICG_{it-1}$). Additional calculations (not shown) indicate that the overall impact of V^f_{it} on $\Delta LITR_{it}$ is positive, suggesting that lower vote expectations lead to stronger tax cuts. The same exercise needs to be done for the interpretation of the marginal effect of ICG_{it-1} on $\Delta LITR_{it}$. Here the effect of ICG_{it-1} on $\Delta LITR_{it}$ is ($\alpha_4 + \alpha_3 V^f_{it}$). Additional calculations (not shown) indicate that the effect is positive. This is opposite to the expectations. Leftist governments seem to be more in favour of local income tax rate reductions than rightist governments. Maybe this is because leftist governments, traditionally having higher tax rates –see Table 13 on p. 71, have more margin to reduce tax rates before elections. The sign of $LITR_{it-1}$ in the local income tax rate change estimation could confirm this suggestion. Indeed, the negative sign $LITR_{it-1}$ suggests that governments with high $LITR_{it-1}$ cut this rate stronger in election years.

The sign of $BALANCE_{it-1}$ is also (as expected) negative. Governments with a surplus in the year before elections thus seem to offset local income tax rates with this positive balance. Governments appear to use short-term financial margins to finance tax rate reductions, while the indicator of long-term financial health ($DEBT_{it-1}$) remains insignificant. Also

$NPAR_{it-1}$ and its squared form present a insignificant coefficients. Fragmentation thus seems to have no significant impact on pre-electoral tax rate changes. We experimented with different fragmentation operationalisations, but none of them resulted in significant signs for the fragmentation variables.[128] Finally, there are positive significant coefficients for ΔPOP_{it-1} and for dummy variables Y_{1994} and Y_{2000} indicating respectively that –as expected– an increase in the population pushes LITR up and the presence of year specific effects in our model.

Opposite to the local income tax rate change estimation where multiple effects were identified, only the level of the local property tax rate ($LPTR_{it}$), a change of the grant revenue ($\Delta GRANT_{it}$) and a change in the population over 64 (ΔOLD_{it-1}) and the year dummies significantly determine the level of local property tax rate changes in election years. The coefficients have the expected signs. $\Delta GRANT_{it}$ presents a negative sign suggesting that a change of the grant level does not create illusion effects, but is seen as an alternative revenue source and allows to reduce tax rates when the grant revenue increases. Vote expectations thus are not affecting pre-electoral local property tax rate changes.

4.4.4 Extension

As in section 3.4.5 of the previous chapter (see p. 109), a number of additional analyses are performed.

The novelty of this and previous chapter has been that we do not rely solely on historical political stability or on ex-post information to estimate the government's vote expectations (see footnote 105 on p. 117). Nevertheless, we wonder what the results would be if we do

[128] The results of the tax rate change estimations using different fragmentation variables are presented in Table A16 on p. 211. We only present results of the estimations including all variables tested. The results of the most efficient estimations including only significant variables correspond to those presented in columns (3) and (4) of Table 21 on p. 139

rely only on such measurements. Below we re-estimate equation (VIII.) replacing V^{f}_{it} by the ex-post vote share for the incumbents (V_{it}) as a proxy for the government's vote expectations. Table 22 presents the results when we follow Solé Ollé (2003), Case (2001) and Caplan (2001), who use (ex-post) election outcome (V_{it}) as a proxy for the vote variable.

Table 22 SUR estimation results of the tax rate change functions using the ex-post vote results

Dependent variable	(1) $\Delta LITR_{it}$	(2) $\Delta LPTR_{it}$	(3) $\Delta LITR_{it}$	(4) $\Delta LPTR_{it}$
V_{it}	0.025 **	0.749	0.022 **	-0.009 **
	(2.58)	(0.92)	(2.27)	(-2.50)
$V_{it} * ICG_{it-1}$	-0.005 **	-0.135	-0.004 **	-
	(-2.37)	(-0.82)	(-2.12)	
ICG_{it-1}	0.270 **	8.679	0.241 **	-
	(2.48)	(0.95)	(2.27)	
$BALANCE_{it-1}$	-0.001 **	-0.012	-0.001 **	-
	(-2.38)	(-0.64)	(-1.96)	
$DEBT_{it-1}$	-4.94E-05	0.001	-	-
	(-1.42)	(0.30)		
$LITR_{it-1}$	-0.031 **	-	-0.033 ***	-
	(-2.42)		(-2.62)	
$LPTR_{it-1}$	-	-0.008 **	-	-0.009 **
		(-2.21)		(-2.50)
$\Delta TBASE_{it-1}$	0.042 *	2.902	-	-
	(1.65)	(1.26)		
$\Delta GRANT_{it}$	-0.001	-1.171 ***	-	-1.200 ***
	(-0.26)	(-2.88)		(-3.06)
$\Delta YOUNG_{it-1}$	-1.676	-224.068	-	-
	(-0.55)	(-0.89)		
ΔOLD_{it-1}	3.971	490.446 *	-	512.319 **
	(1.23)	(1.81)		(2.21)
$\Delta UNEMPL_{it-1}$	-2.356	-15.168	-	-
	(-1.53)	(-0.12)		
ΔPOP_{it-1}	8.45E-05	-0.001	14.20E-05 **	-
	(1.27)	(-0.14)	(2.30)	
$NPAR_{it-1}$	-0.066	-2.720	-	-
	(-0.94)	(-0.47)		
$NPAR^2_{it-1}$	0.014	0.898	-	-
	(0.80)	(0.64)		
Y_{1994}	0.205 ***	17.078 ***	0.154 ***	17.629 ***
	(4.85)	(4.80)	(5.53)	(5.55)
Y_{2000}	0.230 ***	17.863 ***	0.187 ***	17.151 ***
	(6.07)	(5.44)	(7.07)	(6.31)
Intercept	-1.433 **	-55.859	-1.249 **	-7.433 *
	(-2.56)	(-1.21)	(-2.34)	(-1.74)
R^2	0.122	0.074	0.112	0.065
Adjusted R^2	0.101	0.051	0.102	0.058
Wald F statistic (p-value)	204.89 (p<0.01)		186.83 (p<0.01)	

Note : N=688; Values in parentheses are t-values (except for Wald-test, where p-values are presented); * significant at 10%, ** at 5% and *** at 1%. Wald statistic has a Chi^2 distribution with R degrees of freedom (R being the number of estimated parameters).

The model relying on forecasted vote expectations (V^{f}_{it}) in Table 21 and that on election outcome (V_{it}) in Table 22 do not much differ. In general, all coefficients are highly comparable for the two models. Not only are the same variables significant but their coefficients also present highly comparable values. The same can be said for the R^2s. For

the purpose of this research, we may conclude that vote functions are a good proxy for vote expectations. Still, the use of ex-post vote results may not be generalised. Indeed, the results of this extension is contrary to what could be concluded from the extension made in section 3.4.5 on p. 119, when the proxy for the probability of electoral defeat was not based on vote expectations but on ex post electoral outcome. Thus in general we cannot recommend the use of ex-post vote results to proxy the government's vote expectations.

A second extension tries to discriminate between strategic and opportunistic pre-electoral tax policy. Though our results provide evidence that vote expectations are a relevant variable explaining pre-electoral local income tax rate policy, the analysis does not allow us to explain *why* incumbents react in this manner. Tax rate manipulation could be related to PBC motivations, to strategic debt incentives or to both. Theoretically, we would expect to find strategic behavior in governments that do not believe they will be re-elected; that is, in governments with low vote expectations. Opportunistic behavior in the case of governments that have positive beliefs about their chances of re-election seems more a matter of convenience. As tax policy manipulation might result in extra votes, they might as well invest in it. To test this hypotheses, we fall back on the multiple dummy approach we introduced in the extension of the previous chapter (see p. 109). We will rerun the analyse of this chapter with a multitude of dummies that cover the governments with vote-expectations below x-percent.[129] This enables us to test whether pre-electoral tax rate changes are inspired by opportunistic motivations, strategic debt incentives or by both.

Some remarks on the presentation of the results of this approach in Table 17. First, we have not run regressions for governments with vote expectations below 35% as the number of observations is too low to run the regression. Second, we only present results using ICG as ideological variable and using the actual number of parties as fragmentation

[129] These dummy variable gets value 1 if the forecasted vote percentage (V^f_{it}) is below 49%, 48%,… etc. (thus $V^f_{it}<x\%$) and 0 otherwise

variables. Third, we only present estimation results of the most efficient regressions (thus leaving out insignificant variables) of the $\Delta LITR_{it}$ estimation.[130] From the previous results there is no indication that the vote expectations affect $\Delta LPTR_{it}$. The results for $\Delta LPTR_{it}$ are only once presented in the last column of Table 22. Finally, the vote expectations variables (PED^{x}_{it}) and its interaction term with ICG are only significant for vote expectations between 40% and 54%. We also tested for expected vote percentages above 54% and below 40%, but these results are identical to those when PED^{54}_{it} and PED^{40}_{it} are introduced. For these regressions without significant PED^{x}_{it} variables, we only present the results of these "border percentages" as they are identical when using vote expectations above and below these percentages. This reduction of presented regression results allows to provide a general view of the results of these additional analyses. The results are reported in Table 23.

[130] When an interaction term is significant, the constitutive variables of the interaction model remains included regardless of whether they are significant. Insignificant constitutive variables are shown in *italic*.

Table 23 SUR estimation results of the tax rate change functions using different levels of vote expectations (continues)

Dependent variable	$\Delta LITR_{it}$								
	PED^{55}_{it}	PED^{54}_{it}	PED^{53}_{it}	PED^{52}_{it}	PED^{51}_{it}	PED^{50}_{it}	PED^{49}_{it}	PED^{48}_{it}	…
PED^{x}_{it}	-	-0.320 *	-0.359 *	-0.386 **	-0.363 *	-0.347 *	-0.048 *	-0.429 **	…
		(-1.74)	(-1.94)	(-2.07)	(-1.93)	(-1.82)	(-1.90)	(-2.05)	
$PED^{x}_{it}*ICG_{it-1}$	-	0.062 *	0.068 *	0.072 **	0.067 *	0.064 *	-	0.077 *	…
		(1.66)	(1.84)	(1.92)	(1.78)	(1.66)		(1.83)	
ICG_{it-1}	-	*-0.010*	*-0.010*	*-0.010*	*-0.006*	*-0.003*	-	*0.002*	…
		(-0.37)	*(-0.40)*	*(-0.39)*	*(-0.24)*	*(-0.12)*		*(0.08)*	
$BALANCE_{it-1}$	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	…
	(-1.82)	(-1.89)	(-1.90)	(-1.89)	(-1.95)	(-1.94)	(-1.82)	(-1.94)	
$DEBT_{it-1}$	-	-	-	-	-	-	-	-	…
$LITR_{it-1}$	-0.035 *	-0.031 **	-0.030 **	-0.028 **	-0.028 **	-0.029 **	-0.029 **	-0.028 **	…
	(-2.79)	(-2.37)	(-2.29)	(-2.18)	(-2.17)	(-2.23)	(-2.26)	(-2.15)	
$LPTR_{it-1}$	-	-	-	-	-	-	-	-	…
$\Delta TBASE_{it-1}$	-	-	-	-	-	-	-	-	…
$\Delta GRANT_{it}$	-	-	-	-	-	-	-	-	…
$\Delta YOUNG_{it-1}$	-	-	-	-	-	-	-	-	…
ΔOLD_{it-1}	-	-	-	-	-	-	-	-	…
$\Delta UNEMPL_{it-1}$	-	-	-	-	-	-	-	-	…
ΔPOP_{it-1}	15.30E-05 **	14.40E-05 **	14.20E-05 **	14.10E-05 **	14.40E-05 **	14.40E-05 **	15.50E-05 **	14.00E-05 **	…
	(2.49)	(2.33)	(2.30)	(2.29)	(2.34)	(2.34)	(2.52)	(2.28)	
$NPAR_{it-1}$	-	-	-	-	-	-	-	-	…
$NPAR^2_{it-1}$	-	-	-	-	-	-	-	-	…
Y_{1994}	0.151 ***	0.154 ***	0.155 ***	0.156 ***	0.154 ***	0.153 ***	0.153 ***	0.154 ***	…
	(5.41)	(5.51)	(5.54)	(5.59)	(5.52)	(5.48)	(5.50)	(5.55)	
Y_{2000}	0.187 ***	0.186 ***	0.187 ***	0.187 ***	0.187 ***	0.187 ***	0.189 ***	0.185 ***	…
	(7.07)	(7.00)	(7.04)	(7.05)	(7.04)	(7.05)	(7.16)	(6.99)	
Intercept	0.037	0.067	0.061	0.052	0.032	0.021	-0.018	-0.008	…
	(0.45)	(0.43)	(0.40)	(0.35)	(0.22)	(0.14)	(-0.12)	(-0.06)	
R^2	0.100	0.107	0.109	0.110	0.110	0.109	0.105	0.112	…
Adjusted R^2	0.093	0.096	0.098	0.100	0.100	0.098	0.097	0.102	…
Wald F statistic (p-value)	176.75 (p<0.01)	182.45 (p<0.01)	183.72 (p<0.01)	185.23 (p<0.01)	184.97 (p<0.01)	183.92 (p<0.01)	181.08 (p<0.01)	186.73 (p<0.01)	…

Note : N=688; Values in parentheses are t-values (except for Wald-test, where p-values are presented); * significant at 10%, ** at 5% and *** at 1%. Wald statistic has a Chi^2 distribution with R degrees of freedom (R being the number of estimated parameters).

Table 23 SUR estimation results of the tax rate change functions using different levels of vote expectations (continued)

Dependent variable		$\Delta LITR_{it}$							
		PED^{47}_{it}	PED^{46}_{it}	PED^{45}_{it}	PED^{44}_{it}	PED^{43}_{it}	PED^{42}_{it}	PED^{41}_{it}	PED^{40}_{it}
PED^{x}_{it}	…	-0.474 **	-0.506 **	-0.470 **	-0.554 **	-0.586 **	-1.343 ***	-1.553 ***	-
		(-2.23)	(-2.35)	(-1.96)	(-2.23)	(-2.30)	(-4.38)	(-4.45)	
$PED^{x}_{it}*ICG_{it-1}$	…	0.086 **	0.094 **	0.086 *	0.101 **	0.104 **	0.257 ***	0.297 ***	-
		(2.01)	(2.15)	(1.78)	(2.01)	(2.00)	(4.08)	(4.15)	
ICG_{it-1}	…	-0.001	*-0.003*	*0.004*	*0.002*	*0.002*	*-0.004*	*-0.001*	-
		(-0.04)	*(-0.13)*	*(0.17)*	*(0.11)*	*(0.11)*	*(-0.22)*	*(-0.02)*	
$BALANCE_{it-1}$	…	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *
		(-1.88)	(-1.90)	(-1.92)	(-1.94)	(-1.93)	(-1.92)	(-1.86)	(-1.82)
$DEBT_{it-1}$	…	-	-	-	-	-	-	-	-
$LITR_{it-1}$	…	-0.028 **	-0.029 **	-0.030 **	-0.030 **	-0.030 **	-0.032 ***	-0.032 ***	-0.035 ***
		(-2.23)	(-2.30)	(-2.37)	(-2.35)	(-2.37)	(-2.61)	(-2.59)	(-2.79)
$LPTR_{it-1}$	…	-	-	-	-	-	-	-	-
$\Delta TBASE_{it-1}$	…	-	-	-	-	-	-	-	-
$\Delta GRANT_{it}$	…	-	-	-	-	-	-	-	-
$\Delta YOUNG_{it-1}$	…	-	-	-	-	-	-	-	-
ΔOLD_{it-1}	…	-	-	-	-	-	-	-	-
$\Delta UNEMPL_{it-1}$	…	-	-	-	-	-	-	-	-
ΔPOP_{it-1}	…	$13.70E^{-05}$ **	$13.40E^{-05}$ *	$13.40E^{-05}$ *	$12.70E^{-05}$ *	$12.50E^{-05}$ **	-	-	$15.30E^{-05}$ **
		(2.22)	(2.17)	(2.16)	(2.05)	(2.01)			(2.49)
$NPAR_{it-1}$	…	-	-	-	-	-	-	-	-
$NPAR^2_{it-1}$	…	-	-	-	-	-	-	-	-
Y_{1994}	…	0.155 **	0.155 ***	0.154 ***	0.153 ***	0.154 ***	0.166 ***	0.166	0.151 ***
		(5.56) *	(5.55)	(5.52)	(5.52)	(5.55)	(6.15)	(6.16)	(5.41)
Y_{2000}	…	0.186 **	0.186 ***	0.187 ***	0.188 ***	0.188 ***	0.196 ***	0.191 ***	0.187 ***
		(7.03) *	(7.03)	(7.04)	(7.09)	(7.12)	(7.46)	(7.27)	(7.07)
Intercept	…	0.009	0.022	-0.005	0.001	0.001	0.050	0.030	0.037
		(0.06)	(0.16)	(-0.04)	(0.00)	(0.00)	(0.39)	(0.23)	(0.45)
R^2	…	0.113	0.112	0.110	0.113	0.116	0.126	0.122	0.100
Adjusted R^2	…	0.103	0.102	0.100	0.103	0.105	0.117	0.113	0.093
Wald F statistic	…	187.39	186.97	185.17	187.14	189.23	198.55	197.96	176.75
(p-value)		(p<0.01)	(p<0.01)	(p<0.0)	(p<0.01)	(p<0.01)	(p<0.01)	(p<0.01)	(p<0.01)

Note : N=688; Values in parentheses are t-values (except for Wald-test, where p-values are presented); * significant at 10%, ** at 5% and *** at 1%. Wald statistic has a Chi^2 distribution with R degrees of freedom (R being the number of estimated parameters).

The results in Table 23 show that local income tax rate changes can be assigned to the governments with vote expectations between 40% and 54%. There is an interaction of the PED^{x}_{it} dummy variables with ICG. Given these levels of vote expectations, the local income tax rate changes are positively affected the more the government is positioned to the right. This is in line with the findings in the previous section. Only for PED^{49}_{it} the interaction remains insignificant. Also the control variables present comparable coefficients as presented in Table 22. Only in the PED^{42}_{it} and PED^{41}_{it} estimations ΔPOP_{it-1} loses significance. In those regressions, the absolute values of the coefficients of PED^{x}_{it} and its interaction terms with ICG_{it-1} increase strongly, suggesting stronger effects of the vote expectations on the tax rate changes when the vote expectations are low.

Can we conclude from the results in Table 23 whether the tax rate changes are inspired from PBC, strategic or both motivations?

Strategic motivations are expected for governments with the lowest vote expectations. As shown in Table A8 on p. 205 in appendix, the minimum expected votes in the dataset is 34.04%. We do not find a significant effects of the vote expectations on tax rate changes when testing PED^{x}_{it} with x<40%. Those governments, expecting less than 40% of the votes, do not let their local income tax rate changes depend on their bad vote expectations. As a result, we first were reluctant to conclude that tax rate changes are inspired by strategic motivations. Still there is evidence that the group of governments with vote expectations below 41% more strongly reduce LITR than governments with higher vote expectations. We assume that this level of expected votes is not yet high enough to stimulate opportunistic behavior.[131] We rather suggest that here evidence is found of strategic behavior as the dataset may not be not rich enough to find a significant effect of the vote expectations on the local income tax rate changes for governments with expectations below 40%. Indeed, from Table A13 on p. 209 in appendix, it is clear that there are only 21 observations with vote expectations below 40%, while this number of observations increases by 50% for governments with vote expectations below 41%. When increasing the pool of governments by increasing the upper limit of the expected vote percentage to 41%, 42%,… there is evidence that these governments reduce local income tax rate more in election years. Moreover the effect of the vote expectations is strongest in the estimations employing PED^{41}_{it} and PED^{42}_{it}. So we may change our first impression and suggest that governments with low vote expectations may change tax rates from strategic motivations.

[131] As mentioned on p. 131 we assume that from the PBC-perspective, governments are expected to lower tax rates when they fear an electoral outcome just short of a majority position. An expected level of votes below 41% is not interpreted as "just short of a majority position".

Can we assign local income tax rate changes to opportunistic motivations? We think we can. We see that governments with vote expectations around 50% reduce tax local income tax rate in election years. Governments thus may cut LITR to gain the necessary additional votes to regain majority or to strengthen the majority if there is only a tight majority anticipated. When the dummy PED^{x}_{it} takes into account also governments that expect to get more than 54% of the votes, there is no evidence of tax rate changes caused by the governments' vote expectations. Governments may feel safe about re-election when at least 54% of the votes are anticipated.

Then do the results allow to find the expected percentage of votes where the governments' behavior turns over from strategic to opportunistic (or the other way around)? The results do not allow to find a "tipping point". The results in Table 23 do not present an indication of changing behavior when increasing the expected vote expectations. We only can conclude that especially governments with vote expectations below 54% cut local income tax rate more strongly in election years. This could not be confirmed when governments with vote expectations below 40% are tested individually.

4.5 Concluding comments

There is a lot of empirical evidence that supports the theory of the political budget cycle. Unlike the bulk of the literature, which examines expenditures, deficits or debt, this chapter looks for the existence of a political tax rate cycle. Tax rate reductions can be expected before elections, not only from a PBC point of view, but also relying on the theory of the strategic use of debt. A limited number of papers aside, very little is known about the determinants of tax rate changes.

Our analysis contributes to this research by stressing the role of the government's prospects of getting into office again in pre-electoral tax rate policy. We introduce the expected vote percentage at the next elections as an explanatory variable for tax rate changes in election years. Our model makes use of predictions derived from a vote function as a proxy for electoral outcome expectations. The empirical analysis shows that in election years, electoral prospects are decisive for local income tax rate reductions. Our results suggest that governments with lower vote expectations are more inclined to lower local income tax rates, suggesting the presence of strategic behavior. A more detailed analysis tried to distinguish opportunistic from strategic behavior. This extended analysis proved evidence of strategic and opportunistic behavior, but does not succeed in finding a tipping point. Changes of the local property tax rate, however, appear not to be affected by the expected vote percentage.

We are conscious of the fact that our results are exploratory and in particular that the forecasted vote percentage estimated from a vote function (V^{f}_{it}) is only a proxy to measure for the government's prospects. It might be more convenient to collect survey data about the incumbent's perceived likelihood of survival in future election years. Still, it is to be noted that the additional analysis using ex post electoral outcome as a proxy for expected vote expectations produces very similar results.

Further options for future research are to verify the robustness of our model by using a dataset characterized by a longer time horizon. Another challenge could be the enlargement of the model to incorporate non-election years in order to look for consistent opportunistic or strategic behavior throughout the electoral cycle. Our results (of election years only) only suggest the existence of such behavior in the years preceding elections. Such an extension would also permit us to control for partisan influences, as fiscal post election reactions would become perceptible in the model.

Chapter 5 : Projected tax revenues

When comparing projected tax revenues with collected tax revenues, Flemish local governments appear to be optimistic about the expected tax revenues. On average, projected tax revenues are about five percent higher than actually collected tax revenues. In this chapter we build on the strategic debt models, the weak government hypothesis and the 'war of attrition' concept to explain why more fragmented governments should be more inclined to overestimate tax revenues.[132]

5.1 Introduction

Theoretical and empirical research shows that differences in the political and institutional characteristics of governments are important determinants of the (fiscal) policies they pursue. A central role in this respect is often given to government fragmentation, that is, to the extent in which power is dispersed over different parties or politicians. For example, in their path-breaking work, Roubini & Sachs (1989a,b) show that weaker (i.e. more fragmented) governments tend to face larger budget deficits and debts. This lack of (fiscal) austerity in fragmented governments is often explained by pointing to their higher spendthrift. Compared to one-party governments, fragmented governments tend to have higher spending levels, which leads to their inferior budgetary outcomes (e.g. Volkerink & de Haan, 2001 and Perotti & Kontopoulos, 2002).

In the present chapter, we focus on the revenue rather than the expenditure side. Moreover, we take the analysis one step back by looking at government behavior at the time of drafting the budget (instead of concentrating exclusively on actual spending or revenue data). Specifically, we examine whether fragmented governments tend to be systematically more optimistic (than one-party governments) about expected revenue levels.

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[132] This chapter has recently been published as "Goeminne, S., Geys, B. & Smolders, C., 2008, Political fragmentation and projected tax revenues: evidence from Flemish municipalities, *International Tax & Public Finance 15(3)*, 297-315."

Such behavior leads to negative budgetary 'surprises' during the fiscal year and 'unexpected' deficits post hoc, thus providing an alternative explanation for the higher budget deficits of fragmented governments.

Three possible reasons can be advanced why government fragmentation would lead to more optimistic revenue forecasts. Firstly, when parties fear to lose their position in the ruling majority after upcoming elections, the models of the strategic use of debt or deficits suggest that they may want to curtail the policy options of their successors by incurring fiscal deficits and debts. As parties in a coalition government are likely to be less certain about future power than one-party governments, they may have a larger incentive to be (over)optimistic with respect to budgeted revenues (thereby creating fiscal deficits post hoc and restricting the options of future governments). Secondly, highly fragmented governments facing a balanced budget requirement and the impossibility to spend money that was not entered into the budget (such as is the case at the Belgian local government level) can help accommodate their higher spendthrift by an 'optimistic bias'. Indeed, "some commentators have suggested that budget estimates are inherently sensitive to political pressures which, it is presumed, sacrifice accuracy in order to mitigate the need to undertake program cuts" (Plesko, 1988; 483). Finally, though related, a rosy estimate may facilitate decision-making on the budget. As reaching agreement is more difficult under highly fragmented governments, easing the 'war of attrition' (cf. Alesina & Drazen, 1991) through optimistic assessments of future revenues may be most needed under such circumstances.

This analyse is not the first that regards the accuracy of the government's budget forecasts. Still, though some scholars regard European countries (e.g. Bisschoff [2004] on German Länder; Lago-Peñas & Lago-Peñas [2004] on Spanish municipalities and Serritzlew [2005] on Danish municipalities), most of the literature focuses on the US (e.g. Bretschneider & Gorr, 1987; Rubin, 1987; Plesko, 1988; Bretschneider *et al.*, 1989; Cassidy *et al.*, 1989; Shkurti & Winefordner, 1989; Miller, 1991; Mocan & Azad, 1995; Auerbach, 1995, 1999;

Deschamps, 2004; Voorhees, 2004 and Reddick, 2004).[133] Given the characteristics of the party system in the US, this precludes a thorough analysis of the effect of government fragmentation on (local) government revenue forecast accuracy. The present chapter addresses the latter issue –i.e. whether political fragmentation leads to politically-motivated manipulation of the budget– using a panel dataset on 242 Flemish municipalities for the period 1992-2002.

The remainder of this chapter is structured as follows. Section 5.2 reviews the literature on (revenue) projection errors and presents the theoretical basis for our main research hypotheses. Section 5.3 introduces the empirical analysis. The main findings are summarized in section 5.4.

5.2 The literature and hypotheses

Under- or overestimation of revenues can be due to inadequate forecasting, inefficient revenue collection or both. Hence, to explain revenue forecast errors, we should determine the elements that undermine the government's ability and willingness to make adequate assessments of their future revenue streams and/or those that lead to inefficient revenue collection. Most authors studying the quality of tax projections mainly point to the influence of the technical aspects of the budgeting and tax collection process. Such studies assess the effect, for example, of using 'expert' judgments rather than more advanced econometric techniques to make forecasts (e.g. Bretschneider *et al.*, 1989; Mocan & Azad, 1995; Reddick, 2004; Voorhees, 2004), of the level of politicians' risk aversion when faced with uncertainty in the forecasting process (e.g. Rubin, 1987; Bretschneider & Gorr, 1989) or from the tax administration's effort to reduce tax non-compliance (and what influences this effort level) (e.g. Mayshar, 1991; Hunter & Nelson, 1995; Young *et al.*, 2001; Esteller-Moré, 2005).

[133] In addition, several scholars indirectly analyse the gap between budgeted and actual revenues by considering the adequacy of tax collecting bodies using a tax technology function (e.g. Mayshar, 1991; Hunter & Nelson, 1995; Young *et al.*, 2001; Esteller-Moré, 2005).

Yet, even in the absence of the distorting factors noted above, tax projections might still not be accurate. In fact, we argue that political-institutional characteristics of the government may affect (or incite) revenue forecast errors. To date, only few studies take such elements into account and thereby mostly focus on electoral and ideological effects (e.g. Bretschneider & Gorr, 1987; Cassidy *et al.*, 1989; Ohlsson & Vredin, 1996; Bischoff, 2004; Serritzlew, 2005; Paleologou, 2005). As mentioned in the introduction, we focus on the effect of government fragmentation on forecasting behavior. To the best of our knowledge, this has only been briefly taken up by Serritzlew (2005). Still, several scholars have previously addressed whether "political party dominance" affects forecasting accuracy (e.g. Rubin, 1987; Bretschneider & Gorr, 1987; Bretschneider *et al.* 1989; Cassidy *et al.*, 1989; Shkurti & Winefordner, 1989; Mocan & Azad, 1995; Voorhees, 2004; Paleologou, 2005). However, in a two-party setting such as the US or the UK (where all these studies focus on), it is unclear to what extent this "dominance" also captures ideological differences between the parties. Moreover, this two-party setting precludes a test of whether the number of parties in the government as such affects forecasting accuracy. It is exactly the latter relation that is central to the present analysis.

Specifically, we hypothesize that fragmented governments are susceptible to be more optimistic about future revenues. We may find arguments to support this contention in the literature on strategic use of debt –that is the connection thread of this dissertation. Still also the models on "government weakness" and the "war of attrition" should be mentioned in this context.

5.2.1 Strategic use of debt

First, we refer again to the strategic use of debt models that could explain why politicians deliberately overestimate tax revenues.[134] These models are (again) an interesting framework, in this case to expect a stronger bias towards overestimation in fragmented governments. In fact, whether or not the current government engages in such a strategic debt game depends on the likelihood of getting into office during the next period. Given that parties in a coalition not only have to 'win' the elections, but also need to survive the ensuing coalition negotiations, they are on average less certain of future power than parties that do not share power (Ashworth *et al.*, 2006). Hence, their shorter time horizon may lead coalition governments to be more sensitive to the strategic use of debt. Indeed, in Table 18 on p. 115 we present evidence of strategic debt behavior in fragmented local governments, while this was absent in single party governments. We thus may expect fragmented governments to more strongly (and consciously) engage in 'cosmetic accounting' (by means of overestimating revenues) while drafting the budget.

5.2.2 The weak government hypothesis

Second, we draw attention to the "Weak Government Hypothesis" (WGH; Roubini & Sachs, 1989a,b). As already introduced in section 2.3.2 on p. 41, this hypothesis states that weaker –i.e. more fragmented– governments tend to follow less restrictive fiscal policies leading to higher levels of expenditures as well as higher debts and deficits. To finance this higher spendthrift, fragmented governments require more revenues and may therefore be tempted to increase their financial leeway by being more optimistic in their revenue projections (see also Voorhees, 2004).

[134] For a more detailed discussion on the strategic debt models, we refer to chapter 3.

This effect is likely to be especially strong in our setting (i.e. the Flemish municipalities) due to two restrictions on local budgetary decision-making. Firstly, no expenses are allowed unless they are written into the municipality's budget. That is, to execute an expenditure plan in year t, it must be taken up in the budget drafted in year t-1. While this does not imply that expenditure shocks cannot occur, such additional spending should first be written into the budget through so-called budget amendments (which have to be approved by a majority of the local council).[135] Secondly, Flemish municipalities are obliged to present a balanced budget. As this rule does not imply a statutory obligation to close the fiscal year with a balanced account, the balanced budget requirement is rather "weak" (cf. Poterba, 1995) and unrealistic revenue estimates can lead to ex-post budget deficits. Both these specificities together make that optimism over revenue streams allows fragmented governments to implement a higher level of expenditures at time t without needing to worry about a need to balance the budget ex post. Moreover, optimistic revenue forecasts carry a lower political cost in terms of votes lost at election time (at least in the short term) compared to an increase in taxation. As politicians can be expected to act in a way to minimize the political costs of their actions (e.g. the HW model)[136], over-estimation of future revenues is more likely to occur than, say, increases in tax rates.[137]

It is important to note here that we do not impose an explicit objective by fragmented governments to consciously overestimate tax revenues to accommodate their higher expenditures (i.e. we do not assume a desire for deficits in fragmented governments). The politicians drafting the budget may well believe in achieving the budgeted level of revenues. Indeed, the 'cognitive dissonance' literature argues that people have preferences over their

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135 As mentioned in "1.2.4 Budgeting process" on p. 26, the budget as approved (preferably) before 31 December need not be the final budget. In the course of the fiscal year, some modifications can or must take place because of technical reasons or to balance the budget when exceptional events impose additional expenditures. The analysis in this chapter does not consider such modifications due to lack of data.

136 See section 2.3.1 on p. 38 for more details on the HW model.

137 Poterba (1994) explicitly points to the use of such 'cosmetic accounting' to satisfy balanced-budget rules. For an overview of the impact of balanced-budget rules on fiscal policies, see Poterba (1995).

states of beliefs and select sources of information to confirm these 'desired beliefs' (see e.g. Akerlof & Dickens, 1982). In other words, people like to believe what they want to be the(ir) truth. Or, in our story, politicians desire a certain level of revenues (which is likely to be higher for fragmented governments) and they are convinced to realize (at least) that revenue level. This conviction is built on arguments that support the achievement of this revenue level while other arguments that reject these beliefs are disregarded.

5.2.3 War of attrition

In their pioneering work, Alesina & Drazen (1991) model fiscal decisions within coalition governments as a 'war of attrition'. For example, in the event of an (exogenous) shock that deteriorates the government's budgetary situation, a stabilization process will be initiated in which each group of the coalition attempts to wait the others out. The reason is that waiting until the others capitulate allows a party to pass the largest part of the negative effects of the stabilization effort to the other parties (and their electorate). The lower the degree of political cohesion (or, the more fragmented the government), the later is the expected date of stabilization (see also Bulow & Klemperer, 1999 and Martinelli & Escorza, 2007).

This idea of different parties struggling to reach agreement over (fiscal) policy decisions can straightforwardly be applied to the analysis of revenue forecast biases. Indeed, an optimistic estimation of government revenues is likely to have a positive impact on the budget debate as the common pool of resources seemingly expands. Consequently, more coalition members are able to introduce policies into the budget that satisfy their electorate, which eases the drafting of the budget. Increasing the common pool of resources by an optimistic assessment of future tax revenues could thus prevent difficult budget negotiations. Alternatively, and arguably more in line with the original argumentation of Alesina & Drazen (1991), it may be more difficult for fragmented governments to agree on necessary fiscal adjustments in the budget. Optimism about future revenues then is a means to shift the burden of these adjustments to the future and might ease the current budgeting

process. Since Alesina & Drazen (1991) state that large coalitions find it particularly hard to reach agreements, politically fragmented governments can be expected to be more optimistic about their tax revenues than single party governments. As for the Weak Government Hypothesis, we do not expect an intention to overestimate tax revenues to be present.

Note, however, that it might become more difficult to ease the war of attrition by enlarging the common pool through (possibly subconscious) optimistic estimations when the number of coalition partners becomes large. The reason is that there clearly is a limit to being optimistic. Thus, even though politicians are likely to select their sources of information to fit their desired beliefs (cf. "cognitive dissonance" theory, Akerlof & Dickens, 1982), this is unlikely to lead to ever-increasing optimism without losing credibility about the budget towards the electorate and the opposition. This loss of reputation or credibility may be perceived as a cost to over-estimations (or over-optimism) (cf. Lago-Peñas & Lago-Peñas, 2004) and might lead to a non-linearity in the fragmentation effect.

5.3 Empirical analysis

To empirically assess the relation between government fragmentation and forecast error in tax projections, we use a panel dataset from 1992 to 2002 for 242 Flemish municipalities. Though there are 308 Flemish municipalities, data availability precludes the use of more than these 242 municipalities. In section 5.3.1 we introduce the dependent variable. Section 5.3.2 provides a detailed account of the model's specification and the measurement of our variables. Section 5.3.3 presents the methodology and empirical results.

5.3.1 Dependent variable

The dependent variable of our analysis will be the degree of foresight of collected taxes ($DFCT_{it}$). This variable equals the ratio of projected to realized local tax revenue of municipality i in year t. $DFCT_{it}$ can be interpreted as the percentage of budgeted revenues that is actually collected by the local government and is calculated as:

$$DFCT_{it} = BT_{it}/CT_{it}$$

where: BT_{it} = budgeted local taxes of municipality i for year t

CT_{it} = collected local taxes of municipality i for year t

When $DFCT_{it}$ is higher (lower) than 1, tax revenues are overestimated (underestimated) in the municipal budget. As can be seen in 0 in appendix on p. 213 –where we provide summary statistics for all the variables in the model– Flemish municipalities have a tendency to (slightly) overestimate local tax revenues. On average, budgeted revenues from local taxes are about 5 percent higher than collected revenues (given that local taxes are approximately 8% of total revenues, this implies an overestimation of total revenues of 0.4%, ceteris paribus). 0 in appendix on p. 214 –providing more details about the distribution of the dependent variable over space and time– shows that both the mean and standard deviation increase over the period 1992-2002. Hence, not only is there a tendency towards more optimistic revenue projections, the variation in these prediction errors across municipalities also slightly increases over time (the same can be observed from the information on the interquartile distribution of $DFCT_{it}$ in 0 in appendix on p. 214).

When constructing $DFCT_{it}$ we only take into account purely *local* taxes. Important for our purposes is that the budget builds on forecasts for different revenue sources. These forecasts, which are central to our empirical work, should be divided in two parts. Firstly, there are various revenue sources (such as intergovernmental grants or revenues from surcharges on federal or regional taxes) where local governments obtain an estimate of the revenue level from the higher-level government and simply take this up in their budget.

Since the projection is then not made by the municipalities themselves, they cannot be held accountable for any bias in these projections (and we disregard these revenue streams in our analysis). Secondly, there exist a number of revenue sources where local governments make revenue projections on their own. This is mainly the case for purely *local* taxes (for which municipalities set the tax base as well as the tax rate independently and fully autonomously). Hence, if the local government is susceptible to make biased revenue projections, local tax revenue (accounting for 17% of total tax revenues and roughly 8% of total revenues) is the most accessible to do so. This is the reason why we focus on *local* tax revenues in the remainder of this chapter. Tax revenue projections used in the empirical analysis are taken from the budget as approved by the local council (see footnote 135 on p. 156). Following the fiscal year, the annual account is drawn up. The collected local tax revenues we use in our analysis derive from this annual account.

5.3.2 Model specification

We formulate the following multivariate model (IX.) to test our predictions (subscripts i and t referring to municipalities and time respectively):

$$\text{(IX.)}\quad DFCT_{it} = \alpha_1 + \alpha_2\, DFCT_{it-1} + \alpha_3\, DFCT_{it-2} + \alpha_4\, TAXP_{it} + \alpha_5\, TAXN_{it} + \alpha_6\, DEF_{it-1} + \alpha_7\, POP_{it} + \alpha_8\, POPGR_{it} + \alpha_9\, FIRMGR_{it} + \alpha_{10}\, TREND_t + \alpha_{11}\, FRAG_{it} + e_{it}$$

As made clear in the previous section, $DFCT_{it}$ is the dependent variable of our model. A lagged dependent variable is included in the model to account for possible slow adjustments in local government behavior. We expect this variable to carry a positive sign indicating that mis-estimations of tax revenues in any given year are not magically resolved in the following years. Preliminary work showed that two lagged terms of our dependent variable are necessary to remove all autocorrelation from the residuals. We expect both these lagged terms to present a positive coefficient. Since last year's tax forecast error is likely to weigh more heavily on this year's forecast error, we also hypothesize that $\alpha_2 > \alpha_3$.

Before we discuss the central explanatory variable of the model (i.e. political fragmentation), we first briefly go into the various control variables we included based on findings in the preceding literature. Firstly, we control for the importance of local tax revenues ($TAXP_{it}$). This is operationalised as local tax revenues divided by total revenues. In line with the tax technology function literature (e.g. Mayshar, 1991), we anticipate that municipalities deriving a larger share of their revenues from local taxation improve their tax administration performance. This increases collected revenues relative to budgeted revenues, such that we hypothesize a negative coefficient estimate on this variable.

A second control variable takes into account the number of taxes a municipality levies ($TAXN_{it}$). This is operationalised as a simple count of all the different local taxes from which revenues are generated in a given year. It is clear that a larger number of taxes tend to make the budgeting process more complex. More tax legislation has to be scrutinized by the local tax administration, more tax bases have to be determined and so on. In line with findings from the literature on securities analysts' revenue forecast accuracy (e.g. Duru & Reeb, 2002), we expect that this complexity of the local tax system is associated with more optimistic budgets, or a positive coefficient is expected. The reason is that diversification adds to the unpredictability of income, which may well have an "incremental effect on optimism (…) due to additional opportunities for managerial discretion" (Duru & Reeb, 2002; 418).

Following Esteller-Moré (2005), we also control for the possibility that the tax administration's effort depends on the budgetary situation in the municipality. The more precarious this situation is, the higher the effort to collect tax revenues (and the stricter tax laws will be enforced). Therefore, we include the fiscal deficit as a share of total revenues incurred during the previous fiscal year (DEF_{it-1}). We expect Flemish municipalities (like their Spanish counterparts) to become more active in enforcing tax rules when facing a

deficit during the previous year. Given that collected revenues then increase relative to budgeted revenues, we expect a negative coefficient.[138]

Next, population size (POP_{it}, in 1000 inhabitants) is introduced to control for the size of the municipality. This can have two opposing effects. On the one hand, it is likely to indicate more complexity and thus greater forecast difficulty. In line with the above argument, this is likely to lead to more optimistic estimations, such that a positive coefficient is expected. It should be noted here that the correlation between population size and the number of local taxes in the municipality is moderately strong (r=0.43). On the other hand, larger municipalities may benefit from economies of scale. They tend to have a larger (tax) administration such that tax administration performance is likely to increase. This increases collected revenues relative to budgeted revenues, leading to a negative coefficient estimate on this variable. Taking both effects together, the sign of α_7 is a priori uncertain.

We furthermore control for the impact of tax base changes. Since local taxes are levied on both inhabitants and firms, the evolution in the number of inhabitants ($POPGR_{it}$) and firms ($FIRMGR_{it}$) may affect the local tax revenue forecast error. These variables are measured as year-on-year growth rates in population size and the number of firms respectively.[139] A negative coefficient is expected for both these variables. The reason is that inhabitants or firms leaving (entering) the territory stop (start) paying local taxes while the local government is unaware of the intention of individuals or firms to leave (enter) at the time of preparing the budget. Hence, a higher number of inhabitants or firms leaving

[138] Esteller-Moré (2005) also includes grants as a share of total revenues to account for a possible reduction in tax enforcement when a larger part of income is obtained through grants from higher-level governments. We exclude this variable in the present analysis as its introduction in a model containing $TAXP_{it}$ (i.e. the share of local tax revenues in the municipality's total revenues) led to significant multicollinearity problems. Inclusion of $TAXP_{it}$ gave a better overall fit of the model, hence the choice for this variable in the final model.

[139] Most local taxes are lump sum taxes. Hence, all inhabitants (and firms) must pay the same amount. As such, the change in the number of potential taxpayers provides an adequate proxy for the change of the tax base.

(entering) decreases (increases) the amount of taxes collected by the municipality. As the amount of revenues as recorded in the budget remains fixed at the time of these population (or industrial) changes, a lower (higher) amount of collected revenues due to these changes leads to higher (lower) values of the dependent variable, such that negative coefficients are expected.

The inclusion of a linearly increasing trend variable ($TREND_t$) accounts for the (slight) upward trend in the dependent variable. Experimenting with a dummy variable equal to one in the two election years in the sample (1994 and 2000) shows there is no significant election effect once controlling for the upward time trend. The same holds when we model an election cycle by including a variable measuring the time to the next election (ranging from five in the first post-election year to 0 in election years) and its squared values. Consequently, and unlike Ohlsson & Vredin (1996), Young *et al.* (2001), Bischoff (2004), Paleologou (2005) and Serritzlew (2005), we do not explicitly account for election effects in the final model.[140]

Finally, we introduce two different operationalisations to test our main hypothesis that fragmented governments have more optimistic tax revenue projections. The first –$NPAR_{it}$– measures fragmentation as a simple count of the number of parties in the ruling coalition (i.e. in the College of Mayor and Aldermen). Given that optimism is unlikely to increase linearly in the number of parties (as one can expect this to lead to credibility problems; see p. 158), we also test for a possible non-linearity in the effect of fragmentation by including a squared term of this variable. The second operationalisation intends to gauge the latter effect in a more elementary way by introducing two dummy variables for two party

[140] Note also that we experimented with using year dummies instead of the time trend. This did not affect our results (and the fit of the model was better when using the linear time trend).

coalition governments ($TWOPAR_{it}$) and 'large' coalitions (i.e. coalitions with three or more parties, $LARGEPAR_{it}$) with single party governments as the rest category.[141]

5.3.3 Methodology and results

It is well known by now that the standard approaches to panel data analysis are inappropriate in a dynamic setting . Both fixed and random effects estimators lead to biased and inconsistent estimation results in the presence of a lagged dependent variable –as $DFCT_{it-1}$ and $DFCT_{it-2}$ in estimation (IX.) on p. 160– (Baltagi, 1995). To remove this bias, it is necessary to provide a valid set of instruments for this lagged dependent variable. Arellano & Bond (1991) offer a solution to this problem by treating the model as a system of equations (viz. one for each time period) and developing a Generalized Method of Moments estimator that exploits the moment conditions for the equations in first differences. Specifically, the estimator is based on taking first differences of the model (to remove municipality-specific effects) and then instrumenting the lagged dependent variable in first differences with suitable lags of its own levels. In particular, values of the dependent variable lagged two periods or more can be used as instruments. The estimator developed by Arellano & Bond (1991) is generally called difference GMM (or GMM-DIF). It is ideal for short time series (such as ours).

However, an important obstruction to using GMM-DIF is that the lagged values of the dependent variable may be only weak instruments in the differenced regression. This could lead to severe finite-sample bias, especially when the series is very persistent (see Blundell & Bond, 1998). Given this, we employ system GMM estimation (GMM-SYS; Arellano & Bover, 1995; Blundell & Bond, 1998). This method combines the moment conditions for

[141] The simple count of the number of parties outperformed the 'effective' number of parties (in which each party is weighed by its number of seats in the council, thus accounting for the relative size of the parties). Also, preliminary analyses indicated that the ideology of the ruling government (ICG_{it} measured as a weighed average ideological position of the coalition parties on a Left-Right scale) was not significantly related to forecast accuracy. Hence, this variable was not retained in the final estimations.

the equations in first differences exploited in the GMM-DIF estimator with additional moment conditions for the equations in levels. The introduction of these additional moments increases the efficiency of the estimation. Note also that we use the one-step rather than the two-step variant of GMMSYS. Although the latter is asymptotically more efficient, two-step GMM estimation is found to lead to significant downward bias in the estimated standard errors (Arellano & Bond 1991; Blundell & Bond 1998).

Table 24 provides the estimation results. Six sets of results are given, which differ only in their measurement of the (core) government fragmentation effect. Columns (1) and (2) provide the most general results and look for a linear effect of political fragmentation via $NPAR_{it}$. In columns (3) and (4), we test for possible non-linearity in the fragmentation effect by adding the squared term of $NPAR_{it}$. Finally, in columns (5) and (6), the effect of fragmentation is estimated in a more elementary way by including two dummy variables: $TWOPAR_{it}$ (which is 1 for two-party coalitions) and $LARGEPAR_{it}$ (which is 1 when the coalition consists of three or more parties). The even columns maintain only the statistically significant variables and as such provide a more efficient estimation –while taking care not to compromise the diagnostic tests reported at the bottom of Table 24.

Table 24 Estimation results using one-step system GMM (1992-2002)

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.431 ***	0.545 ***	-0.145	-0.116	0.392 **	0.425 ***
	(2.67)	(4.60)	(-0.38)	(-0.32)	(2.12)	(2.78)
$DFCT_{it-1}$	0.292 ***	0.267 ***	0.270 ***	0.256 ***	0.258 ***	0.253 ***
	(5.98)	(6.58)	(4.56)	(4.79)	(5.01)	(5.38)
$DFCT_{it-2}$	0.143 ***	0.137 ***	0.143 ***	0.142 ***	0.147 ***	0.148 ***
	(3.16)	(3.42)	(2.68)	(2.69)	(3.24)	(3.17)
$TAXP_{it}$	-0.042 **	-0.039 ***	-0.050 **	-0.051 ***	-0.050 ***	-0.054 ***
	(-2.41)	(-2.90)	(-2.37)	(-2.75)	(-2.81)	(-3.21)
$TAXN_{it}$	0.035 ***	0.029 ***	0.030 *	0.029 ***	0.026 *	0.027 ***
	(2.65)	(3.47)	(1.91)	(2.69)	(1.89)	(2.90)
DEF_{it-1}	-0.001	-	-4.0E-5	-	-4.0E-5	-
	(-0.40)		(-0.02)		(-0.30)	
POP_{it}	-0.003	-	-0.001	-	-3.0E-4	-
	(-0.73)		(-0.12)		(0.07)	
$POPGR_{it}$	0.113	-	0.086	-	0.046	-
	(1.28)		(0.82)		(0.48)	
$FIRMGR_{it}$	0.031 **	0.028 ***	0.035 **	0.033 **	0.032 **	0.033 ***
	(2.36)	(2.63)	(2.25)	(2.33)	(2.46)	(2.61)
$TREND_t$	0.031 ***	0.024 ***	0.031 ***	0.026 ***	0.027 ***	0.025 ***
	(3.60)	(4.06)	(3.00)	(3.38)	(3.05)	(3.74)
$NPAR_{it}$	-0.149 **	-0.132 **	0.670	0.745 *	-	-
	(-2.00)	(-1.99)	(1.41)	(1.69)		
$NPAR^2_{it}$	-	-	-0.211 *	-0.228 **	-	-
			(-1.75)	(-2.03)		
$TWOPAR_{it}$	-	-	-	-	0.045	0.064
					(0.36)	(0.55)
$LARGEPAR_{it}$	-	-	-	-	-0.325 **	-0.319 **
					(-2.17)	(-2.78)
Sargan	37.33	49.27	23.64	24.48	34.07	32.48
	(42)	(45)	(43)	(44)	(41)	(44)
AR(1)	-8.00 ***	-10.74 ***	-6.41 ***	-7.18 ***	-8.16 ***	-8.43 ***
AR(2)	-0.75	-0.83	-0.36	-0.30	-0.66	-0.54

Note: N = 2178; t-values between brackets; * significant at 10%, ** at 5% and *** at 1%. Sargan is the test for over-identifying restrictions.[142] AR(1) and AR(2) are the required tests for first- and second-order autocorrelation. None of these diagnostic tests indicates misspecification of the model.

Let us first look at the results for our central variable, viz. government fragmentation. Even though all three arguments quoted in section 5.2 suggest that government fragmentation is likely to lead to more optimistic tax revenue projections, our findings do not support this theoretical prediction. The overall effect is negative which indicates that the number of parties in the College of Mayor and Alderman reduces the share total budgeted revenues in collected revenues. When we take into account the possible non-linearity advanced in section 5.2, we find that the negative effect is mainly driven by the larger coalitions.

[142] We refer to footnote 84 on p. 97 for some more details on the Sargan test.

Coalitions with more than two parties are (much) more careful in their tax projections and –for a given level of collected revenues ex post– expect to receive less revenues.[143] Overall, it is clear that our findings do not support the central theoretical prediction from section 5.2.

What might explain these deviant findings? Several possibilities can be thought of. The first is already introduced in Chapter 2 on p. 60 and suggest that broad-based coalitions might be more likely to follow fiscal policies representative of a larger part of the population (see e.g. Lijphart & Crepaz, 1991). They might thus be less prone to threats of minor interest groups, limiting increases in expenditures and thereby the need to present optimistic budgets. Note, moreover, that "an increase in the number of powerful groups [leads to] a dilution of power concentration" (Tornell & Lane, 1999, 32). Hence, increases in the number of coalition partners reduce the power of each of these in the fiscal appropriation process. This leads to lower levels of overspending when the number of coalition parties increases –thereby limiting the need to present optimistic budgets.

Secondly, the struggle between parties in a larger coalition increases the power of the (normally non-partisan) head of the finance department over the actual budget. That is, if there is only one party in the local government, it might be able to sway the budget in its desired direction, while this becomes more difficult when the number of coalition partners increases (who might have opposing wishes), thereby increasing the power of the finance department. Since (s)he generally has no political motives to drive the budget in one or other direction (but might rather have an incentive to produce prudent forecasts, see e.g. Bretschneider & Gorr, 1989), over-optimism might well decrease with the number of parties in the coalition.

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[143] The results from the two-step GMM variant are broadly comparable to those presented although –as would be expected– significance levels are strongly inflated. To compensate this problem, we calculated a finite-sample correction to the two-step covariance matrix (derived by Windmeijer, 2005). Results using this correction are somewhat weaker than those presented, though coalitions with more than two parties remain significantly more careful than less fragmented governments.

Finally, a higher number of coalition members might increase the probability that at least one of these returns in the next government as there remain few alternative ways of forming a majority government (cf. Allers & Elhorst, 2005). In such a situation, the strategic use of fiscal policy loses its 'attraction' since one might be reducing ones own policy options (if one should return in the following government). Indeed, it would be hard to believe that current coalition members unanimously agree to reduce the policy options of the following government when at least one of them is likely to be seated in this government. Consequently, overestimation of tax revenues may be reduced rather than increased in such a setting.

It is of interest to mention at this point that Ashworth *et al.* (2005 & 2006) and Geys (2007) have previously also found a non-linear effect of government fragmentation on local government's (fiscal) decision-making. Especially interesting is the finding by Ashworth *et al.* (2005) that long-term local public indebtedness in Flemish municipalities reaches a maximum for coalitions of two parties and that more fragmented governments outperform such two-party governments. The pattern observed in our findings is similar (i.e. highly fragmented coalition governments outperform less fragmented coalition governments), but it is also slightly stronger (viz. highly fragmented governments outperform one-party majorities). Overall, the parallel between our findings and those provided for local public debt development in Ashworth *et al.* (2005) provides some support for the view –expressed in the introduction to this chapter– that the differential forecasting behavior of various types of government may provide an alternative explanation for their differences in budget deficits or debts. Indeed, taking both analyses together suggests that the specific pattern in local public debts (as analysed in Ashworth *et al.*, 2005) can be related to the more cautionary revenue forecasting behavior of more fragmented governments (as analysed here). Whether such a systematic relation between government fragmentation, revenue forecasting and (local) public debts caries over into different settings is clearly worth exploring in future research.

Importantly, the observed non-linearity does not seem to be particular to the Flemish setting. In fact, employing data on Danish municipalities, Serritzlew (2005) finds that expenditure overruns in the budgets for roads and care for the elderly are significantly lower when the city council is more fragmented (which, in our terminology, points to more careful budget estimations), while the need for a coalition government increases budget overruns in these two areas. This alludes to a non-linearity similar to the one we observe in our results. To the extent that there is indeed a systematic relation between revenue forecasting behavior and public debts (or deficits), this should translate into a better financial performance of highly fragmented governments in the Danish setting (much like the one observed here for Flanders). As such results are not provided in Serritzlew (2005), it is left to future research in the field to assess the extent to which our results –and the ensuing alternative explanation for government debts and deficits– generalize over different settings, or what drives possible deviations.

Turning to the control variables, it can be seen that, with the exception of the variables that consider tax base changes, the estimated coefficients all have the expected sign. Firstly, both lagged dependent variables $DFCT_{t-1}$ and $DFCT_{t-2}$ are statistically significant in all equations. As expected, they have a positive coefficient indicating that local government behavior is interdependent over time. Municipalities with high (low) ratios of budgeted to collected revenues are more likely to have high (low) values in following years. Also, last year's forecast error clearly weighs more heavily on this year's forecast error compared to that from two years before.

The effect of the share of local taxes in total revenues ($TAXP_{it}$) is statistically significant and in the expected direction. Indeed, municipalities deriving a larger share of their revenues from local taxation appear to increase their tax administration performance, which is in line with the tax technology literature (e.g. Mayshar, 1991). In addition, we find support for the hypothesis that increases in the complexity of the tax system –measured by the number of taxes in the municipality ($TAXN_{it}$)– lead to higher projected revenues

compared to actually collected revenues (cf. Duru & Reeb, 2002). Yet, and in contrast to findings by Esteller-Moré (2005), we do not find that the tax administration's effort depends on the budgetary situation in the municipality. Specifically, the coefficient for the fiscal deficit as a share of total revenues (DEF_{it-1}) has the expected negative sign, but is fails to reach statistical significance.

Like Rubin (1987), we find no effect from population size (POP_{it}). Finally, while we expected that the growth of population ($POPGR_{it}$) and firms ($FIRMGR_{it}$) would negatively affect our dependent variable, both variables have positive coefficients. The growth in the number of firms is even statistically significant in all equations. A possible explanation is that local governments overestimate expected firm movements. That is, the more firms move (ex post), the further the local government 'overshoots' the size of these movements in its (ex ante) expectations. As such, a positive coefficient estimate occurs. This tentative explanation calls, however, for further empirical analysis.

5.4 Conclusion

The present chapter has its relevance for two research fields. On the one hand, it contained one of the first empirical analyses upon the relation between political fragmentation and fiscal policy that explicitly focuses on earlier stages in the fiscal process, i.c. the drafting of the budget. This extends previous research on the Weak Government Hypothesis that exclusively concentrated on actual revenue and/or spending levels. On the other hand, analyses of the government's forecast accuracy have strongly concentrated on technical aspects of the collection and budgeting process, but paid little attention to political-economic factors (such as government fragmentation) as potential explanations.

Using data of 242 Flemish municipalities over the period 1992-2002, our results indicated that the level of political fragmentation affects local government's revenue forecasting behavior. Nonetheless, the findings did not support our theoretical predictions. In fact, our

analysis disclosed that two party coalitions are slightly more optimistic than single party governments (though this effect was not statistically significant), while coalitions with at least three parties are *less* optimistic. This deviant finding may have multiple explanations. For example, it could be argued that broad-based coalitions are less prone to threats of minor interest groups, thereby reducing the need to present (over)optimistic budgets (cf. Lijphart & Crepaz, 1991). Power struggles among the coalition partners may increase the power of the municipality's finance department (which is unlikely to be prone to over-optimism). Finally, larger coalitions may imply that at least one of its members participates in future governments, limiting the attraction of the strategic use of fiscal policy.

Interestingly, and importantly, our results are consistent with the evidence in Ashworth *et al.* (2005) that, compared to single- and multi-party governments, two-party governments are associated with the highest levels of long-term local public indebtedness in Flemish municipalities. As such, our analysis suggests that the lower level of indebtedness of very fragmented Flemish local governments established in that paper can be related to their more cautionary revenue forecasting behavior. Additionally, Serritzlew (2005) also indicates that highly fragmented local councils in Denmark are also prone to lower budget overruns (at least on parts of the budget). Clearly, future research will need to confirm these findings in different settings and/or at various levels of government, and indicate whether this systematic relation between government fragmentation, revenue forecasting and fiscal deficits is a general phenomenon.

General conclusion

Politics go hand in hand with policy. The introduction to the Hettich & Winer model already made clear that attention should be paid to the political process when analysing fiscal policy. In general, policymakers' fiscal policy is guided by their re-election interests. The literature presents different models of fiscal policy making, each with a focus on a specific political theme. As an introduction to local fiscal policy, we tested the presence of some of these widely used models when estimating the determinants of the rates of the most important Flemish local taxes, namely those on income and property. We investigated the role of partisan effects, of fragmentation, of interaction dynamics, of electoral cycles and of fiscal illusion effects on both tax rates. We found (individual) evidence of partisan, of non linear fragmentation effects, of interaction effects and of electoral cycles for the local income and property tax rates. The evidence on fiscal illusion was mixed. We could confirm the grant illusion and the renter illusion hypotheses for the local property tax, while the tax complexity and the tax elasticity hypotheses are confirmed for the local income tax rate. This evidence only tells us that a specific effect exists, but does not control for the impact of other effects. The real contribution of chapter 2 to the existing literature is that it brings together the mostly widely cited political and economic tax rate determinants in one model. We suggest that a simultaneous model is to be preferred as this way of estimating the tax rates is more in line with reality. The results produced by the joint and individual models differ for the local property tax for the tests on partisan characteristics, on the government strength and on tax complexity. Additional analyses were conducted and indicate that it is especially the interaction terms and the fiscal illusion variables that are dominant in the setting of the local property tax rate.

Even though policymakers' fiscal policy choices are assumed to bring about their re-election, policymakers may fail to achieve this aim. Aware of this failure, policymakers may change their policy from "opportunistic" to "strategic". Indeed, policymakers expecting to lose power may pursue their fiscal policymaking to restrain their successors' scope of

policymaking. Suchlike strategic behavior, the focal point of this dissertation, is introduced in the third chapter by clarifying and testing the different models of the strategic use of debt on Flemish municipalities. These models then are applied in chapters 4 and 5 to construct theoretical expectations on local fiscal policy.

In general, the literature on the strategic use of debt investigates whether a government changes its fiscal policy when it knows that it will be replaced after the next elections. Governments expecting to be defeated could run deficits to reduce the scope for policymaking of the next government. The literature discerns two strategic debt models. In the Alesina & Tabellini (1990) model, governments expecting to be voted out of office are expected to increase debt. This allows the current government to spend more on services which it prefers and at the same time it reduces the next government's ability to spend on services which the outgoing government does not value. While in the Alesina & Tabellini (1990) model it is the composition of government spending which is central, the Persson & Svensson (1989) model focuses on the level of government spending. In this model, only right-wing governments are expected to increase debt. Traditionally, left-wing governments are expected to increase public expenditures. But right-wing governments expecting to be replaced by a left-wing government can restrict additional public expenditures of the latter by increasing debt; interest and amortization payments will limit their (left-wing) successor's scope for doing so. We tested both hypotheses for the Flemish municipalities and find evidence in line with the Persson & Svensson (1989) model. Still the results owe some comments. Fist of all the strategic debt behavior is only stated for leftist majorities. Probably the consequences of debt changes on its own policy when a government surprisingly returns to office may explain why only leftist majorities change debt strategically. Second, our analyses show that strategic debt behavior is more to be expected in the case of coalition governments. This may be due to the fact that coalition governments have both to win the elections and also to survive the ensuing coalition negotiations. This increases their uncertainty of returning to office and as a consequence their motivation to strategically issue debt. Third, our results show that strategic behavior is

performed by governments with vote expectations below 49%. This chapter adds to the existing literature an alternative measure of the probability of electoral defeat. While in traditional strategic debt models, ex-post election results dominate as proxy for the probability of electoral defeat, we introduced a vote function that estimates the government's vote expectations.

We thus find evidence that debt changes in election years can be explained by the government's vote expectations. One way to change debt is –ceteris paribus– changing tax rates. Therefore in chapter 4 we go more deeply into election-year tax rate changes. We went back to the previous chapter and introduced the government's vote expectation to explain tax rate changes in election years. Indeed, we find a significant impact of the vote expectations on these changes. The lower the vote expectations, the stronger the local income tax rate cuts. This is in line with expectations from strategic use of debt models. Still, also from the political budget cycle theory tax rate reductions can be expected. From this (opportunistic) point of view, governments reduce tax rates to increase their popularity –and by consequence their chance of re-election. A more detailed analysis that allows us to distinguish between different levels of vote expectations presents evidence that governments with vote expectations below 54% reduce tax rates. A significant effect of vote expectations on the local income tax rate changes disappears when the behavior of governments with vote expectations below 55% is studied. Governments thus seem to be sure of re-election –that is they do not reduce local income tax– when they expect at least 54% of the votes. The results of chapter 4 suggest that analyzing the political budget cycle without taking into account the government's vote expectations may lead to premature conclusions. As our results suggest, strategic behavior could be another motivation to reduce tax rates before elections.

Finally, in chapter 5, we investigated whether fragmented governments are more optimistic about tax revenues. Overestimating tax revenues allows governments to spend more than the actual revenues allow for. Firstly, this expectation can be inspired by the strategic use of

debt, the relevance of which for Flemish municipalities was supported by the analyses in chapters 3 and 4. Overestimating tax revenues can be a strategic instrument for increasing debt when a government expects not to get into office again after the upcoming elections. The empirical analysis in chapter 3 shows that fragmented governments are more tempted to adopt strategic debt behavior than single party governments. We thus expect fragmented governments to be more optimistic about tax revenues than single party governments. A second argument that may endorse this expectation is the "weak government hypothesis". This hypothesis states that more fragmented governments tend to follow less restrictive fiscal policies, leading to higher levels of expenditures and/or deficits and debt. To finance this higher spending, fragmented governments require more revenues. This may tempt them to increase their financial leeway by being more optimistic in their revenue projections. Thirdly, the "war of attrition" may explain higher optimism in coalition governments. Reaching an agreement becomes more difficult the higher the number of coalition parties. In this situation a more optimistic view on tax revenues may facilitate the reaching of agreements as additional (budgeted) revenues allow the various government parties to spend more on policies that satisfy their respective electorates. Our results indicated that the level of political fragmentation does indeed affect the local government's revenue forecasting behavior. Nonetheless, we find that coalitions with at least three parties are less optimistic. This suggest that in governments with large coalitions, the strategic use of debt becomes less attractive, as the higher the number of coalition partners, the higher the probability that at least one of its members will participate in the future government and the less likely that there will be agreement on strategic debt policy.

Besides the enumeration of the individual chapters' findings a comment that surpasses the individual chapters. In chapters 2 and 5 we ran analyses for all years within a time period of at least 10 years. The results of these analyses may be generalised and allow to draw conclusions that count on the long-term. Conversely Chapters 3 and 4 focused on (strategic) policy changes in election years only. This difference in time perspective can explain differences in the conclusions. We e.g. refer to the impact of the level of grant

(changes) on local property tax (changes). In the long run there is evidence of grant illusion, while in election years increases of grants are used to cut local property tax rates. Also the impact of fragmentation differs. The long-term analyses of chapter 2 and 5 provide evidence of a non-linear impact of fragmentation on the dependent variables, while in the short-term analyses of the chapters in between, initially no impact of fragmentation can be observed. These deviant findings suggest that governments have different objectives on the short- than on the long-run. Indeed, governments act different when facing elections. Then short-term myopic policy crops up from strategic or opportunistic motives, while the long-term tax rate policy should lead to an optimal tax rate that reflects the needs and characteristics of the municipality. Second, not only the time perspective is different for chapters 2 and 5 compared to the chapters 3 and 4, when investigating fiscal policy in the latter chapters, we go one step back in the decision process and look for a specific fiscal policy determinant that has received no attention yet in fiscal policy research in Flemish municipalities. We introduce the role of the vote expectations in the setting of local fiscal policy.

What can we finally conclude from the research presented in this dissertation? Can we confirm that in Flemish local governments fiscal policy is influenced by strategic considerations? Yes, we can. We find that leftist majorities change debt strategically before elections. We also show that tax changes before elections are inspired by the expectation of electoral defeat. Still, if the question is whether this behavior is omnipresent, then the answer is "no". First, with respect to debt changes before elections, there is only evidence for leftist majorities. Second, when pre-electoral tax rate changes are discussed, the results do not allow to verify until what level of expected vote percentage the strategic behavior can be observed. Finally, the expectation that strategic debt policy forces fragmented governments to overestimate tax revenues could not be confirmed. Still, the exercise of testing strategic behavior is interesting and add insights to the domain of local fiscal policy studies. We therefore recommend to take into account vote expectations when examing local fiscal policy in the future.

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Appendices

Table A1 Descriptive statistics of the variables of the tax rate functions and data sources (1990-2002)

	Mean	Median	Max.	Min.	Std. Dev.	Source
Local income tax rate ($LITR_t$)	6.68	7.00	10.00	0.00	1.14	VVSG[144]
Local property tax rate ($LPTR_t$)	1044.91	1000.00	2300.00	170.00	298.57	VVSG
Ideological Complexion of the Government (ICG_{t-1})	4.85	5.10	6.10	2.70	0.52	MICE, VUB[145]
Actual number of government parties ($NPAR_{t-1}$)	1.72	2.00	5.00	1.00	0.75	MICE, VUB
Effective number of government parties ($ENPAR^2_{t-1}$)	1.56	1.47	4.50	1.00	0.60	MICE, VUB
Two party government ($TWOPAR_{t-1}$)	0.44	0.00	1.00	0.00	0.50	MICE, VUB
Large party government ($LARGEPAR_{t-1}$)	0.13	0.00	1.00	0.00	0.34	MICE, VUB
Average LITR of neighbouring municipalities ($LITRN_t$)	6.81	6.80	8.67	4.93	0.50	VVSG, matrix of MICE, VUB
Average LPTR of neighbouring municipalities ($LPTRN_t$)	1050.89	1034.50	1979.17	450.00	224.79	VVSG, matrix of MICE, VUB
Time before elections (TBE_t)	2.62	3.00	5.00	0.00	1.69	-
Grants (p/c) ($GRANT_t$)	95.04	86.78	820.91	56.38	52.58	MICE, VUB
Tax elasticity (TEL_t)	0.54	0.56	0.85	0.01	0.11	MICE, VUB
Hirschman-Herfindahl Index (HHI_t)	0.37	0.37	1.13	0.09	0.06	Own calcul. on AHA[146]
Percentage of non-owner occupied residences ($RENT_t$)	25.13	23.67	54.50	7.80	7.50	AHAEconomy
Number of inhabitants (POP_{t-1})	18999.71	13054.50	473082.00	84.00	31085.73	FPS Economy[147]
Proportion of young ($YOUNG_{t-1}$)	0.24	0.24	0.32	0.18	0.02	FPS Economy
Proportion of elderly (OLD_{t-1})	0.15	0.15	0.25	0.06	0.03	FPS Economy
Unemployment rate ($UNEMPL_{t-1}$)	0.03	0.02	0.07	0.00	0.01	CORE, UCL[148]
LIT tax base ($TBASE^{LIT}_{t-1}$)	21.49	20.66	53.76	1.23	6.55	AHA
LPT tax base ($TBASE^{LPT}_{t-1}$)	12.77	11.21	47.38	3.53	5.62	AHA
Tax dependence LIT ($TDEP^{LIT}_{t-1}$)	0.23	0.23	0.58	0.00	0.07	AHA
Tax dependence LPT ($TDEP^{LPT}_{t-1}$)	0.19	0.19	0.55	0.04	0.06	AHA
Debt (p/c in 1000€) ($DEBT_{t-1}$)	1.81	0.75	122.50	0.00	7.00	MICE, VUB

144 "Vereniging Vlaamse Steden en Gemeenten", the Association of Flemish Cities and Municipalities.

145 MICE (Micro-Economics for Profit and Non Profit Sector) research team of the Faculty of Economic, Social and Political Sciences, and Solvay Business School, Vrije Universiteit Brussel.

146 Agency for Home Affairs of the Flemish Government .

147 Belgian Federal Public Service Economy, SME, Independent Professions and Energy.

148 CORE (Center for Operations Research and Econometrics), Université catholique de Louvain.

Table A2 Research on local inhabitant tax rate determinants

Authors (year of publication), dataset, period, method	Dep. Variable	Variable	Hypothesis	Results[149]
Hypothesis 1 on ideology				
Allers & Elhorst (2005), 496 Dutch municipalities, 2002, ML (spatial lag and error)	Average local property tax rate[150]	Dummy for a majority of right-wing parties in the Council	Municipalities with a higher share of right-wing parties in the council experience lower tax rates	1
Solé Ollé (2003), 105 Spanish municipalities in the surrounding of Barcelona, 1991-1999, OLS & IV	a. Local property tax rate b. Local vehicle tax rate c. Local business tax rate	Dummy for leftist governments	Leftist governments impose higher tax rates	a. 1 b. 1 c. 1
Hypothesis 2 on fragmentation				
Solé Ollé (2003), 105 Spanish municipalities in the surrounding of Barcelona, 1991-1999, OLS & IV	a. Local property tax rate b. Local vehicle tax rate c. Local business tax rate	Dummy for coalition governments	Coalition governments levy higher tax rates	a. 2 b. 3 c. 2
Hypothesis 3 on strength				
Solé Ollé (2003), 105 Spanish municipalities in the surrounding of Barcelona, 1991-1999, OLS & IV	a. Local property tax rate b. Local vehicle tax rate c. Local business tax rate	Difference in absolute value between vote-share of the government at previous elections and 50%	Governments with a higher vote margin impose higher tax rates	a. 1 b. 3 c. 1
Allers & Elhorst (2005), 496 Dutch municipalities, 2002, ML (spatial lag and error)	Average local property tax rate	Dummy if the number of coalition partners divided by the total number of parties represented in the municipal council exceeds 0.5	Coalitions backed by a large majority mimic neighbouring tax rates less	1

[149] Results : 1 = Hypothesis confirmed; 2 = Significant coefficient with opposite sign; 3 = Insignificant coefficient; sig+ = Significant positive coefficient.

[150] In Dutch municipalities, local governments can set different tax rates for residential and for non-residential property. Allers & Elhorst (2005) take the weighted average tax rate in each municipality as dependent variable. The vanlues of residential and non-residential property are used as weights.

Hypothesis 4 on interaction				
Allers & Elhorst (2005), 496 Dutch municipalities, 2002, ML (spatial lag and error)	Average local property tax rate	Weighted average tax rate of the neighbouring municipalities	Tax rates respond positively to changes in neighbouring tax rates	1
Brueckner & Saavedra (2001), 70 cities in the Boston metropolitan area, 1980 & 1990, ML (spatial lag)	a. Local property tax rate (1980) b. Local property tax rate (1990)[151]	4 different weighted average tax rates of the neighbouring municipalities	The municipality's response to an increase in the tax rates of competing municipalities is to increase its tax own rate.	a. 1 b. 3
Heyndels & Vuchelen (1998), 589 Belgian municipalities, 1991, 3SLS	Local income tax rate & local property tax rate	a. Unweighted average tax rates of first-order neighbours b. Unweighted average tax rates of second-order neighbours	Tax rates are copied among neighbouring municipalities	a. 1 b. 1
Richard *et al.* (2005), 598 Belgian municipalities, 1984-1997, ECM	Local income tax rate & local property tax rate	Different types of distance variables	Tax rate changes must be seen as a movement towards a preferred tax rate	1
Solé Ollé (2003), 105 Spanish municipalities in the surrounding of Barcelona, 1991-1999, OLS & IV	a. Local property tax rate b. Local vehicle tax rate c. Local business tax rate	Tax rates of municipalities located within a distance of 20 km, with different weighting schemes (population, economic and political similarities)[152]	Tax rates respond positively to changes in neighbouring tax rates	a. 1 b. 1 c. 3
Van Parys & Verbeke (2007), 589 Belgian Municipalities, 1991-2004, 2SLS	Local income tax rate & local property tax rate	Several weight matrices of neighbouring tax rates	Municipalities react to a tax change of a neighbour by changing the tax rate of the same tax instrument or by changing the tax rate of another tax instrument	1
Hypothesis 5 on electoral cycles				
Solé Ollé (2003), 105 Spanish municipalities in the surrounding of Barcelona, 1991-1999, OLS & IV	a. Local property tax rate b. Local vehicle tax rate c. Local business tax rate	Year dummies	Tax increases tend to occur in post-election years	a. 1 b. 1 c. 1

[151] Brueckner & Saavedra (2001) investigate tax competition before and after imposition of Proposition 21/2. This proposition is a tax limitation measure, designed to limit the property tax burden. Proposition 21/2 state that total property tax revenu in each city should not exceed 2.5% of the total market value of property. If a local government did not reached this limit, it was required to reduce its levy by 15% per year until the restriction was met. Brueckner & Saavedra (2001; 220) state that "if all cities were constrained by Proposition2'/2, each tax rate would simply equal the levy limit divided by total property value. With taxes thus constrained, the choice problem which presumes interior solutions, would no longer be relevant. As a result, we might expect that evidence of strategic behavior, present in 1980, would have disappeared by 1990. Given that most of Massachusetts' municipalities were taxing at their levy limits in 1990, it would appear that little scope for strategic behavior existed in that year."

[152] Solé Ollé (2003) tested different weighting schemes. In footnote 25, Solé Ollé (2003) indicates that the qualitative results, that are available upon request by the author, are more or less the same.

Hypothesis 6 on fiscal illusion				
Allers & Elhorst (2005), 496 Dutch municipalities, 2002, ML (spatial lag and error)	Average local property tax rate	Unconditional grants per capita	No hypothesis, the variable is introduced as a control variable	Sig+
Bastiaens *et al.* (2001), 308 Flemish municipalities, 1994, SUR	a. Local income tax rate b. Local property tax rate	Complexity of the tax structure: Hischman-Herfindahl index	a. Higher complexity reduces the political cost of raising local income taxes b. Higher complexity reduces the political cost of raising local property taxes	a. 1 b. 3
Brueckner & Saavedra (2001), 70 cities in the Boston metropolitan area, 1980 & 1990, ML (spatial lag)	Local property tax rate	Per capita state aid	No hypothesis, the variable is introduced as a control variable	Sig+
Van Parys & Verbeke (2007), 589 Belgian Municipalities, 1991-2004, 2SLS	a. Local income tax rate b. Local property tax rate	Several weight matrices of neighbouring tax rates	No hypothesis, the variable is introduced as a control variable	a. 3 b. Sig+

Table A3 Research on fiscal policy in Flemish or Belgian municipalities

Authors, (year of publication), Flemish (F) or Belgian (B) dataset, period	Dep. Variable	Variable	Hypothesis	Results[153]
Hypothesis 1 on ideology				
Ashworth & Heyndels (1997) F, 1994	Politicians' opinions of local income/property tax rates	Position on left-right axis	The attitude of incumbents towards a given tax rate is negatively related to their ideological position	3
Ashworth & Heyndels (2000a) F, 1994	Tax choices of local income and local property tax rate changes	Position on left-right axis	To increase tax revenue, right-wing (left-wing) politicians raise income (property) taxes rather than property (income) taxes	1
Ashworth & Heyndels (2000b) F, 1994	Politicians' opinions of local tax burden	Position on left-right axis	Left-wing politicians are more likely to classify a given tax burden as low than right-wing politicians	1
Ashworth *et al.* (2003) F, 1998	Non-0 ending digits in income tax rates	Position on left-right axis	The use of non-0 ending digits in income tax rates is positively related to the ideological position of the electorate along a left-right axis	3
Ashworth *et al.* (2005) F, 1977-2000	Long-term debt	Position on left-right axis	Parties of a left-wing political persuasion have a willingness to furnish higher levels of debt	3
Ashworth *et al.* (2006) F, 1991-1999	Adoption of a green tax	ICG = Weighted average position for the coalition partners on a scale from 0 (extreme left) to 10 (extreme right)	Adoption of a new tax is more likely under left-wing governments	1
Geys (2007) F, 1977-2000	Year-on-year growth rate of real long-term municipal debts	ICG = Weighted average position for the coalition partners on a scale from 0 (extreme left) to 10 (extreme right)	No hypothesis formulated, the variable is introduced as a control variable	Sig+ & 3
Hypothesis 2 on fragmentation				
Ashworth *et al.* (2003) F, 1998	Non-0 ending digits in income tax rates	Number of parties that have at least 2% of the vote	The use of non-0 ending digits in income tax rate is positively related to the number of political parties	3
Ashworth & Heyndels (2005) F, 1989-1996	Change of per capita expenditures	a. Number of parties in the coalition b. Number of spending ministers c. Effective number of parties	Government fragmentation leads to an upward bias in expenditures	a. 1 b. 1 c. NSR[154]
Ashworth *et al.* (2005) F, 1977-2000	Long-term debt	a. Dummy for coalition governments b. Dummies for 1, 2 and large party govs. c. Number of parties(^{2}) d. Effective number of parties(^{2})	Fragmented governments face larger debts	a. 3 b. 1 c. 1 d. 1

[153] Results : 1 = Hypothesis confirmed; 2 = Significant coefficient with opposite sign; 3 = Insignificant coefficient; Sig+ = Significant positive coefficient, NSR = no specific reporting on the results of this variant.

[154] There is only mentioned that actual number of parties performed better.

Ashworth *et al.* (2006) F, 1991-1999	Adoption of a green tax	a. Number of parties in the coalition(²) b. Dummies for single party and coalition governments c. Effective number of parties in the coalition(²)	Adoption of a new tax is less likely under fragmented governments	a. 2 b. 2 c. 2
Goeminne *et al.* (2008) F, 1992-2002	Ratio of projected to realised local tax revenue	a. Number of parties in the coalition(2) b. Dummies for 1, 2 and large party governments c. Effective number of parties in the coalition(²)	Fragmented governments are susceptible to be more optimistic about future tax revenues	a. 2 b. 2 c. NSR[155]
Geys (2007) F, 1977-2000	Year-on-year growth rate of real long-term municipal debts	Dummies for 1, 2 and large party governments	Fragmentation plays an intermediary role in incumbents 'electioneering'	1
Vermeir & Heyndels (2006) F, 1982-2000	The percentage of votes	Number of government parties	The number of government parties has a positive impact on the percentage of votes	1
Hypothesis 3 on strength				
Ashworth *et al.* (2005) F, 1977-2000	Long-term debt	The number of seats in excess of majority	Governments with larger electoral margins have a lower incentive to strategically use debt (and therefore have lower debts)	3
Ashworth *et al.* (2006) F, 1991-1999	Adoption of a green tax	The number of seats in excess of majority	Adoption of a new tax is more likely the larger the electoral margin of the government	3
Hypothesis 4 on interaction				
Ashworth & Heyndels (1997) F, 1994	Politicians' opinions of local income and local property tax rates	a. Average local income tax rate in neighbouring municipalities b. Average local property tax rate in neighbouring municipalities	Political opposition is negatively related to the level of tax rates in neighbouring jurisdictions	a. 3 b. 1
Ashworth & Heyndels (2000a) F, 1994	Tax choices of local income and local property tax rate changes	Neighbouring tax rates *(no indication of calculation)*	Higher tax rates in neighbouring municipalities affect political opposition negatively	1
Ashworth & Heyndels (2000b) F, 1994	Politicians' opinions of local tax burden	Average per capita tax burden in neighbouring municipalities	Politicians consider a given tax burden as higher to the extent that it exceeds the level in neighbouring municipalities.	1
Ashworth *et al.* (2003) F, 1998	Non-0 ending digits in income tax rates	Absolute difference between a municipality's tax rate and average tax rate of neighbouring municipalities	The use of non-0-ending digits in income tax rates is positive related to the absolute difference between the municipality's tax rate and the tax rate in neighbouring municipalities	3
Ashworth *et al.* (2006) F, 1991-1999	Adoption of a green tax	Percentage of neighbours that had an environmental tax in the previous year	Adoption of a new tax is more likely if neighbouring municipalities have already introduced a similar tax	1
Heyndels & Vuchelen (1998) B, 1991	Local income tax rate & local property tax rate	Average tax rates of neighbours	Tax rates are copied among neighbouring municipalities	1
Richard *et al.* (2005) B, 1984-1997	Local income tax rate & local property tax rate	Different types of distance variables	Tax rate changes must be seen as a movement towards a preferred tax rate	1

[155] There is only mentioned that a simple count of the number of parties outperformed the effective number of parties.

Van Parys & Verbeke (2007) B, 1991-2004	Local income tax rate & local property tax rate	Several weight matrices of neighbouring tax rates	Municipalities react to a tax change of a neighbour by changing the tax rate of the same tax instrument or by changing the tax rate of another tax instrument	1
Vermeir & Heyndels (2006) F, 1982-2000	The percentage of votes	Average neighbouring local income tax and local property tax rates	The level of tax rates in neighbouring municipalities has a positive impact on the election results	1
Hypothesis 5 on electoral cycles				
Ashworth *et al.* (2005) F, 1977-2000	Long-term debt	Time before elections(²)	Debt increases when elections come near	1
Ashworth *et al.* (2006) F, 1991-1999	Adoption of a green tax	a. Dummy for election years b. Time before elections	a. The presence of elections has a strong negative effect on the likelihood of introducing a tax b. The further in time from an election, the more likely it is that a green tax will be installed	a. 1 b. 1
Geys (2007) F, 1977-2000	Year-on-year growth rate of real long-term municipal debts	a. Dummy for election years b. Dummy for election and pre-election years	Growth rates of local public debt increases in election periods	a. 1 b. 1
Hypothesis 6 on fiscal illusion				
Ashworth & Heyndels (1997) F, 1994	Politicians' opinions of local property tax rates	a. Renter illusion: Share of renters as percentage of the population b. Number of changes in the tax rate in the recent past (as an indicator of the frequency with which taxes became salient)	a. For any given property tax rate, political opposition is negatively related to the share of non-owner voters b. Political opposition is positively related to the number of tax rate changes in the recent past	a. 3 b. 3
Ashworth & Heyndels (2000a) F, 1994	Tax choices of local income and local property tax rate changes	Number of changes in the tax rate in the recent past (as an indicator of the frequency with which taxes became salient)	Political opposition to tax rate changes is positive influenced by the number of tax rate changes in the recent past	1
Ashworth & Heyndels (2000b) F, 1994	Politicians' opinions of local tax burden	Complexity of the tax structure: Herfindahl index	Politicians consider a given tax burden as lower to the extent that it the tax structure is more complex	3
Bastiaens *et al.* (2001) F, 1994	a. Local non debt expenditures b. Local income tax rate c. Local property tax rate	Complexity of the tax structure: Hischman-Herfindahl index	a. Higher complexity causes an excess demand for public goods b. Higher complexity reduces the political cost of raising local income taxes c. Higher complexity reduces the political cost of raising local property taxes	a. 1 b. 1 c. 3
Heyndels & Smolders (1994) F, 1990	Local expenditures	a. Flypaper effect: relative importance of grants in the median voter's disposable income b. Elasticity of the tax structure: share of the income tax in total taxation c. Simplicity of the tax structure: Herfindahl concentration index d. Renter illusion: percentage of residences that are non-owner occupied	a. The share of grants in the median voter's disposable income is positively related to the level of local expenditures b. A more elastic tax base induces a higher level of spending c. More fragmented tax receipts lead to a higher expenditure level d. A higher percentage of residences occupied by non-owners increases public spending	a. 1 b. 3 c. 1 d. 3
Heyndels & Smolders (1995) F, 1990	Local expenditures	Complexity of the tax structure : a. Hirschman Herfindahl index b. Hannah & Kay index	The use of the Hirschman Herfindahl index overestimates the relative importance of size inequalities, while underestimating the impact of the number of taxes	1

Table A4 Estimation results of the 3SLS estimation of H_2 (on fragmentation) – All variables

	1	2	3	4	5	6
Dep. Var.	$LITR_t$	$LPTR_t$	$LITR_t$	$LPTR_t$	$LITR_t$	$LPTR_t$
Intercept	3.908 ***	-776.919 ***	3.686 ***	-762.640 ***	3.910 ***	-767.712 ***
	(9.79)	(-9.16)	(9.24)	(-8.99)	(10.03)	(-9.36)
$NPAR_{t-1}$	-0.062	42.824 ***	-	-	-	-
	(-0.86)	(2.65)				
$NPAR^2_{t-1}$	0.027	-10.213 ***	-	-	-	-
	(1.60)	(-2.72)				
$ENPAR_{t-1}$	-	-	0.257 ***	36.995 *	-	-
			(2.74)	(1.76)		
$ENPAR^2_{t-1}$	-	-	-0.077 ***	-9.339 *	-	-
			(-3.23)	(-1.74)		
$TWOPAR_{t-1}$	-	-	-	-	0.007	23.474 ***
					(0.24)	(3.50)
$LARGEPAR_{t-1}$	-	-	-	-	0.118 ***	-14.064
					(2.75)	(-1.48)
$LITR_t$	-	33.175 ***	-	32.950 ***	-	33.435 ***
		(10.68)		(10.60)		(10.783)
$LPTR_t$	0.001 ***	-	0.001 ***	-	0.001 ***	-
	(17.60)		(17.62)		(17.60)	
OLD_{t-1}	-3.680 ***	3174.384 ***	-3.859 ***	3167.629 ***	-3.711 ***	3169.795 ***
	(-4.11)	(16.05)	(-4.32)	(16.01)	(-4.15)	(16.06)
$YOUNG_{t-1}$	-1.190	1260.174 ***	-1.084	1240.732 ***	-1.314	1345.184 ***
	(-1.18)	(5.70)	(-1.08)	(5.63)	(-1.29)	(6.07)
$UNEMPL_{t-1}$	9.921 ***	5055.487 ***	10.060 ***	5099.596 ***	9.902 ***	5025.261 ***
	(6.54)	(16.71)	(6.62)	(16.88)	(6.53)	(16.65)
POP_{t-1}	2.19E-05 ***	0.003 ***	2.24E-05	0.002 ***	2.20E-05 ***	0.003 ***
	(19.92)	(10.22)	(20.29)	(10.02)	(19.97)	(10.29)
$TBASE_{t-1}$	-0.113 ***	-27.804 ***	-0.111 ***	-27.878 ***	-0.113 ***	-27.733 ***
	(-28.72)	(-36.00)	(-28.35)	(-36.16)	(-28.667)	(-35.97)
$TDEP_{t-1}$	11.322 ***	3377.134 ***	11.331 ***	3383.700 ***	11.314 ***	3379.794 ***
	(50.02)	(49.26)	(50.09)	(49.19)	(49.99)	(49.40)
$DEBT_{t-1}$	-0.067 ***	-4.692 ***	-0.067 ***	-4.299 ***	-0.067 ***	-4.781 ***
	(-14.28)	(-4.43)	(-14.10)	(-4.02)	(-14.31)	(-4.52)
$TREND_t$	0.118 ***	21.431 ***	0.117 ***	21.413 ***	0.118 ***	21.409 ***
	(19.17)	(21.68)	(19.02)	(21.72)	(19.11)	(21.70)
R^2	0.498	0.616	0.499	0.616	0.498	0.618
Adjusted R^2	0.497	0.615	0.497	0.615	0.497	0.617
Wald F-stat (p)	354936.80 (p<0.01)		354680.40 (p<0.01)		354906.50 (p<0.01)	

Figure 5 Impact of NPAR and ENPAR on LPTR (left axis) and LITR (right axis)

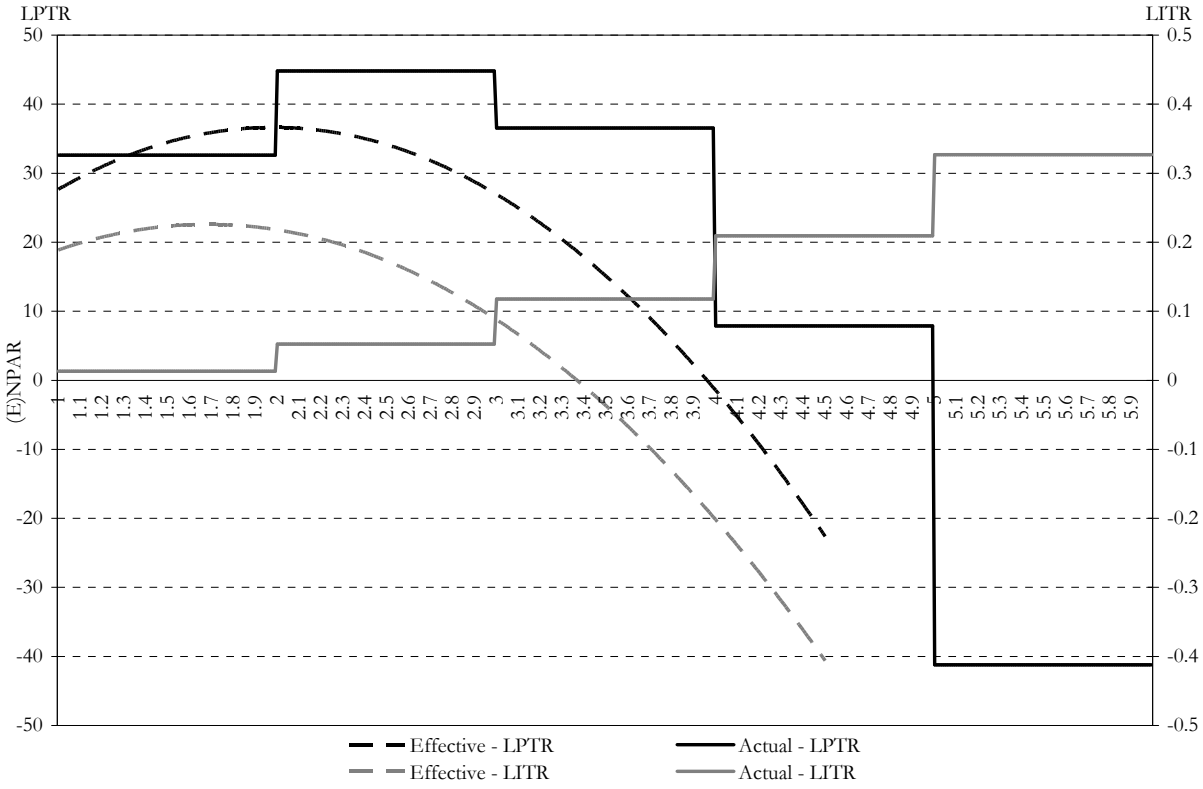


Table A5 Joint impact of TBE and TBE² on the evolution of LITR and LPTR in non-election years compared to the tax rate in election years

Years before elections	LITR	LPTR
5	0.092575	5.138295
4	0.207245	11.30209
3	0.255322	13.82026
2	0.236807	12.85511
1	0.151699	8.344125

Table A6 Estimation results of the 3SLS estimation of all joint hypotheses – All variables

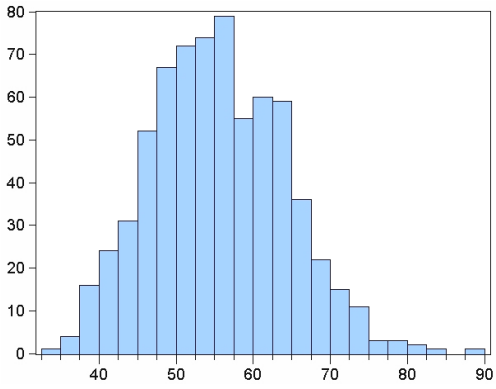
Hyp.	Dep. Var.	1 $LITR_t$	2 $LPTR_t$	3 $LITR_t$	4 $LPTR_t$	5 $LITR_t$	6 $LPTR_t$
	Intercept	-0.445	2260.303 ***	-0.521	2164.484 ***	-0.549	2250.705 ***
		(-0.92)	(6.08)	(-1.10)	(5.49)	(-1.16)	(6.10)
1	ICG_{t-1}	-0.092 ***	27.871 ***	-0.096 ***	27.533 ***	-0.092 ***	27.342 ***
		(-3.41)	(3.55)	(-3.65)	(3.19)	(-3.40)	(3.51)
2	$NPAR_{t-1}$	-0.162 **	45.399 ***	-	-	-	-
		(-2.36)	(3.40)				
	$NPAR^2_{t-1}$	0.036 ***	-7.514 **	-	-	-	-
		(2.29)	(-2.45)				
	$ENPAR_{t-1}$	-	-	-0.047	90.209 ***	-	-
				(-0.52)	(4.91)		
	$ENPAR^2_{t-1}$	-	-	-0.007	-17.563 ***	-	-
				(-0.30)	(-3.56)		
	$TWOPAR_{t-1}$	-	-	-	-	-0.061 **	27.940 ***
						(-2.08)	(4.74)
	$LARGEPAR_{t-1}$	-	-	-	-	-0.017	23.440 ***
						(-0.40)	(2.72)
3	$SEATMAR_{t-1}$	-0.351 ***	-20.672	-0.294 ***	-37.065	-0.348 ***	-21.196
		(-2.71)	(-0.78)	(-2.27)	(-1.47)	(-2.69)	(-0.80)
4	$LITRN_t$	0.267 ***	-188.067 ***	0.252 ***	-173.896 **	0.265 ***	-181.520 ***
		(5.32)	(-2.76)	(4.96)	(-2.32)	(5.28)	(-2.68)
	$LPTRN_t$	-0.001 ***	0.358 ***	-0.001 ***	0.334 ***	-0.001 ***	0.348 ***
		(-5.69)	(3.84)	(-5.31)	(3.23)	(-5.66)	(3.76)
5	TBE_t	0.068 ***	20.578 ***	0.072 ***	18.457 ***	0.069 ***	20.260 ***
		(2.58)	(3.82)	(2.71)	(3.47)	(2.59)	(3.79)
	TBE^2_t	-0.010 *	-2.305 **	-0.010 **	-1.894 *	-0.010 **	-2.247 **
		(-1.91)	(-2.30)	(-2.06)	(-1.93)	(-1.91)	(-2.26)
6.1	$GRANT_t$	-0.003 ***	0.450 ***	-0.003 ***	0.450 ***	-0.003 ***	0.430 ***
		(-4.49)	(3.11)	(-4.75)	(3.13)	(-4.47)	(2.97)
6.2	TEL_t	5.596 ***	-1915.588 ***	5.609 ***	-1929.636 ***	5.605 ***	-1913.930 ***
		(25.44)	(-40.73)	(25.52)	(-42.14)	(25.47)	(-41.09)
6.3	HHI_t	-2.849 ***	213.328 **	-2.800 ***	193.922 **	-2.834 ***	204.338 **
		(-12.12)	(2.46)	(-11.91)	(2.08)	(-12.06)	(2.38)
6.4	$RENT_t$	-	2.279 ***	-	2.391 ***	-	2.300 ***
			(4.97)		(5.30)		(5.06)
	$LITR_t$	-	97.747 ***	-	97.385 ***	-	97.362 ***
			(19.47)		(18.66)		(19.59)
	$LPTR_t$	0.002 ***	-	0.002 ***	-	0.002 ***	-
		(26.13)		(26.03)		(26.18)	
	OLD_{t-1}	5.960 ***	164.958	5.857 ***	142.527	5.937 ***	175.407
		(6.75)	(0.94)	(6.62)	(0.84)	(6.71)	(1.01)
	$YOUNG_{t-1}$	5.614 ***	-1674.855 ***	5.671 ***	-1605.284 ***	5.533 ***	-1608.584 ***
		(5.79)	(-5.62)	(5.88)	(-5.22)	(5.66)	(-5.37)
	$UNEMPL_{t-1}$	1.529	-569.969	1.977	-768.946	1.555	-629.348
		(0.90)	(-1.09)	(1.16)	(-1.39)	(0.92)	(-1.21)
	POP_{t-1}	2.28E-05 ***	-0.001	2.37E-05 ***	-0.001 *	2.28E-05 ***	-0.001
		(12.85)	(-1.58)	(13.27)	(-1.83)	(12.83	(1.44)
	$TBASE_{t-1}$	-0.082 ***	-35.165 ***	-0.081 ***	-35.281 ***	-0.082 ***	-35.127 ***
		(-18.67)	(-39.39)	(-18.20)	(-39.38)	(-18.61)	(-39.62)
	$TDEP_{t-1}$	4.571 ***	1030.822 ***	4.587 ***	1040.839 ***	4.554 ***	1036.918 ***
		(13.06)	(13.03)	(13.13)	(13.55)	(13.01)	(13.22)
	$DEBT_{t-1}$	-0.057 ***	1.365	-0.059 ***	2.053 **	-0.057 ***	1.248
		(-11.90)	(1.38)	(-12.11)	(2.06)	(-11.90)	(1.27)
	$TREND_t$	0.095 ***	22.513 ***	0.095 ***	22.22 ***	0.095 ***	22.641 ***
		(12.28)	(13.35)	(12.25)	(12.81)	(12.22)	(13.54)
	R^2	0.644	0.797	0.646	0.806	0.644	0.801
	Adjusted R^2	0.641	0.795	0.643	0.804	0.642	0.799
	Wald F-stat (p)	711580.10 (p<0.01)		729700.80 (p<0.01)		637581.50 (p<0.01)	
	N	2982					

Table A7 Descriptive statistics of the variables in the vote function (N=688) and data sources

	Mean	Median	Max	Min	Std.dev.	Source
Dep. Var. : Vote share (in %) government parties (V_{it})	54.93	54.05	87.30	24.15	10.18	MICE, VUB
Vote share (in%) current government parties at t-6 (V_{it-6})	56.24	55.08	88.29	37.25	8.32	MICE, VUB
Local income tax rate ($LITR_{it}$)	6.53	6.50	9.00	0.00	0.89	VVSG
Local property tax rate ($LPTR_{it}$)	959.61	950.00	2000.00	170.00	264.79	VVSG
Per capita expenditures (in €1000) (EXP_{it})	0.67	0.62	2.18	0.23	0.25	MICE, VUB
Average local income tax rate of neighbouring municipalities ($LITRN_{it}$)	6.58	6.57	8.00	3.00	0.51	VVSG, matrix of MICE, VUB
Average local property tax rate of neighbouring municipalities ($LPTRN_{it}$)	975.77	969.08	1650.00	400.00	191.66	VVSG, matrix of MICE, VUB
Average per capita expenditures of neighbouring municipalities (in €1000) ($NEXP_{it}$)	0.69	0.67	1.82	0.42	0.17	VVSG, matrix of MICE, VUB
Per capita net taxable income (in €1000) (NTI_{it})	5.49	5.45	8.88	3.21	0.96	MICE, VUB
Unemployment rate ($UNEMPL_{it}$)	0.03	0.02	0.08	0.01	0.01	CORE, UCL
Numbers of parties in the government ($NPAR_{it}$)	1.63	2.00	5.00	1.00	0.87	MICE, VUB

Table A8 Descriptive statistics and histograms of forecasted votes (left histogram) and ex-post vote results (right histogram) (N=688)

	Forecasted votes (V^f_{it})	Ex-post votes (V_{it})
Mean	55.44	54.93
Median	55.08	54.05
Maximum	88.46	87.30
Minimum	34.04	24.15
Std. Dev.	8.71	10.18
Correlation	0.62	



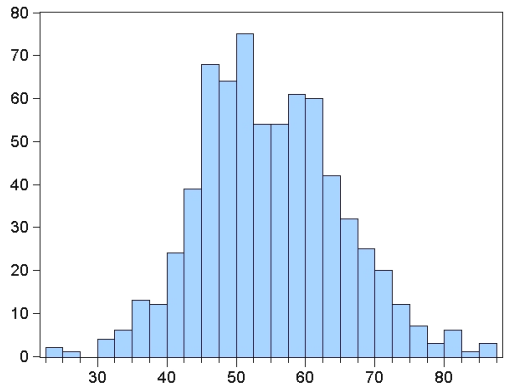


Table A9 IV estimation of the vote share of the government parties in election year t, including ICG

Dependent variable : Vote share of the government parties (V_{it})	(1)	(2)
Intercept	69.973	15.233
	(0.39)	(1.22)
Prior vote (V_{it-6})	0.750 ***	0.757 ***
	(14.84)	(17.89)
Ideological Complexion of the Government (ICG_{it})	-6.919	-
	(-0.19)	
Local income tax rate ($LITR_{it}$)	35.703	-5.413 ***
	(0.79)	(-3.51)
$LITR_{it}$ * ICG_{it}	-7.049	-
	(-0.79)	
Local property tax rate ($LPTR_{it}$)	-0.210	-
	(-1.40)	
$LPTR_{it}$ * ICG_{it}	0.041	-
	(1.37)	
Per capita expenditures (EXP_{it})	-75.50	-
	(-1.50)	
EXP_{it} * ICG_{it}	16.20	-
	(1.53)	
Local income tax rate neighbours ($LITRN_{it}$)	-5.426	7.050 ***
	(-0.86)	(2.71)
Local property tax rate neighbours ($LPTRN_{it}$)	0.015	-
	(1.19)	
Per capita expenditures neighbours ($NEXP_{it}$)	-75.50	-12.643 ***
	(-1.50)	(-3.12)
Net taxable income (NTI_{it})	-0.10	-1.666 ***
	(-0.01)	(-3.18)
Unemployment rate ($UNEMPL_{it}$)	35.235	-
	(0.43)	
Number of government parties ($NPAR_{it}$)	16.310	2.157 ***
	(1.01)	(3.60)
$NPAR_{it}$ * ICG_{it}	-2.748	-
	(-0.881)	
1994 year effect (Y_{94})	6.822 **	-
	(2.21)	
2000 year effect (Y_{00})	0.454	-
	(0.13)	
Party year effects	Yes	Yes
R^2	0.16	0.298
Adjusted R^2	0.12	0.291

Table A10 Descriptive statistics of the variables in the strategic debt estimation (N=688) and data sources

	Mean	Median	Max.	Min.	Std.dev.	Source
Dep. Var. : Change of debt per capita ($\Delta DEBT_{it}$)	61.71	40.03	696.69	-446.52	99.27	MICE, VUB
Prospects of electoral defeat (PED_{it})	0.28	0.00	1.00	0.00	0.45	Own calcul.
Left majority ($LEFTMAJ_{it}$)	0.13	0.00	1.00	0.00	0.33	Own calcul. on MICE, VUB
PED_{it} * $LEFTMAJ_{it}$	0.04	0.00	1.00	0.00	0.19	-
Left government ($LEFTGOV_{it}$)	0.29	0.00	1.00	0.00	0.46	MICE, VUB
PED_{it} * $LEFTGOV_{it}$	0.06	0.00	1.00	0.00	0.23	-
Ideological Complexion of the Government (ICG_{it})	4.90	5.10	6.10	2.70	0.56	MICE, VUB
PED_{it} * $LEFTMAJ_{it}$	1.40	0.00	6.10	0.00	2.25	-
Ex-post electoral defeat (EED_{it})	0.34	0.00	1.00	0.00	0.47	Hasselt Univ.
EED_{it} * $LEFTMAJ_{it}$	0.04	0.00	1.00	0.00	0.20	-
Seats margin ($SEATMAR_{it}$)	0.12	0.10	0.50	0.00	0.09	Own calcul. on Hasselt Univ.
$SEATMAR_{it}$ * $LEFTMAJ_{it}$	0.02	0.00	0.36	0.00	0.05	-
Debt (p/c) ($Debt_{it-1}$)	766.93	685.89	3829.52	120.57	373.96	MICE, VUB
Change of net taxable income (p/c) (ΔNTI_{it})	0.07	0.07	0.65	-0.70	0.10	FPS Economy
Change of proportion of elderly (ΔOLD_{it})	0.00	0.00	0.01	-0.01	0.00	FPS Economy
Change of proportion of young ($\Delta YOUNG_{it}$)	-0.01	0.00	0.01	-0.04	0.01	FPS Economy
Change of unemployment rate ($\Delta UNEMPL_{it}$)	0.00	0.00	0.05	-0.09	0.01	FPS Economy
Change of number of inhabitants (ΔPOP_{it})	-22.06	1.00	18760.00	-16592.00	1822.24	FPS Economy
Change of real interest rate on long-term (federal) government bonds ($\Delta INTEREST_{it}$)	0.47	0.63	0.77	0.02	0.33	MICE, VUB
Actual number of government parties ($NPAR_{it}$)	1.63	2.00	5.00	1.00	0.68	MICE, VUB
Effective number of government parties ($ENPAR_{it}$)	1.52	1.47	3.77	1.00	0.55	MICE, VUB
Two party government ($TWOPAR_{it}$)	0.44	0.00	1.00	0.00	0.50	MICE, VUB
Large party government ($LARGEPAR_{it}$)	0.09	0.00	1.00	0.00	0.28	MICE, VUB

Table A11 Estimation results of the debt change function, using OLS with random effects using linear vote expectations (V^f_{it})

Dependent variable : $\Delta Debt_{it}$	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.109	34.481 ***	2.702	34.481 ***	-199.848	34.481 ***
	(0.00)	(5.20)	(0.08)	(5.20)	(-0.93)	(5.20)
V^f_{it}	0.073	-	-0.102	-	3.451	-
	(0.15)		(-0.19)		(0.89)	
$V^f_{it} * LEFTMAJ_{it}$	0.127	-	-	-	-	-
	(0.10)					
$LEFTMAJ_{it}$	-14.041	-	-	-	-	-
	(-0.20)					
$V^f_{it} * LEFTGOV_{it}$	-	-	0.600	-	-	-
			(0.56)			
$LEFTGOV_{it}$	-	-	-45.331	-	-	-
			(-0.75)			
$V^f_{it} * ICG_{it}$	-	-	-	-	-0.681	-
					(-0.87)	
ICG_{it}	-	-	-	-	40.171	-
					(0.94)	
$DEBT_{it-1}$	0.019	-	0.019 *	-	0.019	-
	(1.62)		(1.66)		(1.66)	
ΔNTI_{it}	53.371	-	52.827	-	52.718	-
	(1.40)		(1.38)		(1.38)	
$\Delta YOUNG_{it}$	2974.685 **	3259.128 **	3023.090 **	3259.128 **	3022.228 **	3259.128 **
	(2.06)	(2.30)	(2.10)	(2.30)	(2.10)	(2.30)
ΔOLD_{it}	5380.352 **	5559.006 **	5382.035 **	5559.006 **	5393.614 **	5559.006 **
	(2.10)	(2.20)	(2.10)	(2.20)	(2.10)	(2.20)
$\Delta UNEMPL_{it}$	34.234	-	-0.947	-	12.223	-
	(0.05)		(0.00)		(0.02)	
ΔPOP_{it}	0.003	-	0.003	-	0.003	-
	(1.38)		(1.33)		(1.37)	
$\Delta INTEREST_{it}$	128.365 **	147.184 ***	129.988 **	147.184 ***	129.790 **	147.184 ***
	(2.44)	(2.89)	(2.48)	(2.89)	(2.48)	(2.89)
$NPAR_{it}$	19.571	-	26.954	-	19.273	-
	(0.81)		(1.07)		(0.79)	
$NPAR^2_{it}$	-5.048	-	-5.966	-	-5.046	-
	(-0.85)		(-1.00)		(-0.85)	
Time dummy variable (1994)	-46.107	-57.034 *	-46.882	-57.034 *	-46.576	-57.034 *
	(-1.48)	(-1.88)	(-1.52)	(-1.88)	(-1.50)	(-1.88)
R^2	0.054	0.043	0.056	0.043	0.055	0.043
Adjusted R^2	0.036	0.038	0.038	0.038	0.037	0.038

Table A12 Estimation results of the debt change function, using OLS with random effects using alternative left-wing variables[156]

Dependent variable : $\Delta Debt_{it}$	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	16.446 (1.10)	34.481 *** (5.20)	16.560 (0.33)	34.481 *** (5.20)	13.369 (0.87)	34.481 *** (5.20)
PED_{it}	5.519 (0.59)	-	-36.981 (-0.52)	-	5.544 (0.57)	-
$PED_{it} * LEFTMAJ_{it}$	-10.173 (-0.42)	-	-	-	-	-
$LEFTMAJ_{it}$	-2.637 (-0.19)	-	-	-	-	-
$PED_{it} * ICG_{it}$	-	-	8.311 (0.59)	-	-	-
ICG_{it}	-	-	0.028 (0.00)	-	-	-
$PED_{it} * LEFTGOV_{it}$	-	-	-	-	-6.857 (-0.34)	-
$LEFTGOV_{it}$	-	-	-	-	-8.867 (-0.79)	-
$DEBT_{it-1}$	0.019 * (1.68)	-	0.019 (1.64)	-	0.019 * (1.65)	-
ΔNTI_{it}	54.450 (1.43)	-	53.229 (1.39)	-	53.469 (1.40)	-
$\Delta YOUNG_{it}$	3107.399 ** (2.17)	3259.128 ** (2.30)	3123.368 ** (2.18)	3259.128 ** (2.30)	3146.954 ** (2.20)	3259.128 ** (2.30)
ΔOLD_{it}	5539.047 ** (2.17)	5559.006 ** (2.20)	5579.694 ** (2.19)	5559.006 ** (2.20)	5572.995 ** (2.18)	5559.006 ** (2.20)
$\Delta UNEMPL_{it}$	-4.467 (0.00)	-	-27.307 (-0.04)	-	-42.800 (-0.06)	-
ΔPOP_{it}	0.003 (1.32)	-	0.003 (1.31)	-	0.003 (1.26)	-
$\Delta INTEREST_{it}$	132.550 ** (2.54)	147.184 *** (2.89)	133.086 ** (2.55)	147.184 *** (2.89)	134.176 ** (2.57)	147.184 *** (2.89)
$NPAR_{it}$	-	-	0.728 (0.12)	-	4.190 (0.59)	-
Time dummy variable (1994)	-48.304 (-1.57)	-57.034 * (-1.88)	-48.539 (-1.57)	-57.034 * (-1.88)	-49.198 (-1.59)	-57.034 * (-1.88)
R^2	0.054	0.043	0.054	0.043	0.055	0.043
Adjusted R^2	0.037	0.038	0.037	0.038	0.038	0.038
Hausman (p-value)	10.89 (p=0.54)		8.72 (p=0.73)		9.37 (p=0.67)	

Table A13 Number of governments with vote expectations below x percent

V^f_{it}<	35%	36%	37%	38%	39%	40%	41%	42%	43%	44%	45%	46%	47%	48%	49%	50%
N	1	3	5	7	17	21	32	39	52	62	76	99	118	143	164	195

[156] In columns (1) and (2) results are reproduced from Table 16 on p. 108 using the $LEFTMAJ_{it}$ dummy variable in line with Pettersson-Lidbom (2001). We do not present all possible fragmentation operationalisations for each left-wing variable approach as the results of Table 16 on p. 108 show that none of fragmentation variables have an impact on debt changes in election years.

Table A14 Descriptive statistics of all variables in the tax rate change estimations (N=688) and data sources

	Mean	Median	Max	Min	Std.dev.	Source
Dep. Var. : $\Delta LITR_{it}$	-0.08	0.00	0.00	-3.00	0.05	VVSG
Dep. Var. : $\Delta LPTR_{it}$	-3.86	0.00	300.00	-200	24.01	VVSG
Forecasted vote share government parties at t-1 (V^f_{it})	55.43	55.08	88.46	34.04	8.71	Own calcul.
Ideological complexion of the government (ICG_{it-1})	4.90	5.10	6.10	2.70	0.56	MICE, VUB
$V^f_{it} * ICG_{it-1}$	271.81	268.95	446.70	105.96	52.59	-
Vote share (in%) government parties at elections (V_{it})	54.93	54.04	87.30	24.15	10.18	Hasselt Univ.
$V_{it} * ICG_{it-1}$	269.24	264.11	465.44	106.75	58.31	-
Left majority ($LEFTMAJ_{it-1}$)	0.13	0.00	1.00	0.00	0.33	MICE, VUB
$V^f_{it} * LEFTMAJ_{it-1}$	7.26	0.00	79.22	0.00	19.25	-
Left government ($LEFTGOV_{it-1}$)	0.29	0.00	1.00	0.00	0.46	MICE, VUB
$V^f_{it} * LEFTGOV_{it-1}$	16.57	0.00	73.34	0.00	26.14	-
Per capita financial balance ($BALANCE_{it-1}$)	35.35	30.23	329.54	-206.58	53.27	AHA
Debt (p/c) ($DEBT_{it-1}$)	766.93	685.89	3829.52	120.57	373.96	MICE, VUB
Local income tax rate ($LITR_{it-1}$)	6.61	7.00	9.00	0.00	0.86	VVSG
Local property tax rate ($LPTR_{it-1}$)	963.47	950.00	2000.00	170.00	265.32	VVSG
Change of LIT tax base ($\Delta TBASE^{LIT}_{t-1}$)	1.26	1.23	3.11	-0.40	0.42	AHA
Change of LPT tax base ($\Delta TBASE^{LPT}_{t-1}$)	0.42	0.41	3.89	-1.97	0.45	AHA
Change of grants (p/c) ($\Delta GRANT_t$)	1.18	1.52	29.85	-10.30	2.98	MICE, VUB
Change of proportion of elderly (ΔOLD_{it-1})	0.00	0.00	0.02	-0.01	0.00	FPS Economy
Change of proportion of young ($\Delta YOUNG_{it-1}$)	0.00	0.00	0.01	-0.02	0.00	FPS Economy
Change of unemployment rate ($\Delta UNEMPL_{it-1}$)	0.00	0.00	0.05	-0.09	0.01	FPS Economy
Change of number of inhabitants (ΔPOP_{it-1})	58.11	54.00	841.00	-3451.00	174.54	FPS Economy
Actual number of government parties ($NPAR_{it-1}$)	1.63	2.00	5.00	1.00	0.68	MICE, VUB
Effective number of government parties ($ENPAR_{it-1}$)	1.52	1.47	3.77	1.00	0.55	MICE, VUB
Two party government ($TWOPAR_{it-1}$)	0.44	0.00	1.00	0.00	0.50	MICE, VUB
Large party government ($LARGEPAR_{it-1}$)	0.09	0.00	1.00	0.00	0.28	MICE, VUB

Table A15 Correlation coefficients of interaction terms with their constitutive variables when $|r|>0.80$

Correlation between	and	r
$V^f_{it} * ICG_{it-1}$	V^f_{it}	0.809800
$V^f_{it} * LEFTMAJ_{it-1}$	$LEFTMAJ_{it-1}$	0.984730
$V^f_{it} * LEFTGOV_{it-1}$	$LEFTGOV_{it-1}$	0.987309

Table A16 SUR estimation results of the tax rate change functions employing different fragmentation operationalisations (continues)

Dependent variable	(1) $\Delta LITR_{it}$	(2) $\Delta LPTR_{it}$	(3) $\Delta LITR_{it}$	(4) $\Delta LPTR_{it}$	(5) $\Delta LITR_{it}$	(6) $\Delta LPTR_{it}$	…
V^{f}_{it}	0.004 ***	0.086 **	0.003 **	0.086	0.003 **	0.086	…
	(2.60)	(0.84)	(2.30)	(0.40)	(2.27)	(0.83)	
V^{f}_{it} * ICG_{it-1}	-0.005 **	-0.171	-0.005 **	-0.167	-0.005 **	-0.167	…
	(-2.28)	(-0.93)	(-2.22)	(-0.90)	(-2.20)	(-0.90)	
ICG_{it-1}	0.009	1.195	0.017	1.669	0.017	1.665	…
	(0.43)	(0.68)	(0.82)	(0.99)	(0.83)	(0.97)	
$BALANCE_{it-1}$	-0.001 **	-0.011	-0.001 **	-0.009	-0.001 *	-0.009	…
	(-2.27)	(-0.58)	(-2.16)	(-0.46)	(-2.14)	(-0.46)	
$DEBT_{it-1}$	-3.87E^{-05}	0.001	-4.11E^{-05}	0.001	-4.13E^{-05}	0.001	…
	(-1.10)	(0.38)	(-1.18)	(0.35)	(-1.18)	(0.35)	
$LITR_{it-1}$	-0.018	-	-0.021	-	-0.021	-	…
	(-1.23)		(-1.50)		(-1.51)		
$LPTR_{it-1}$	-	-0.008 **	-	-0.008 **	-	-0.008 **	…
		(-2.14)		(-2.03)		(-2.03)	
ΔTB_{it-1}	0.045	2.788	0.041	2.872	0.041	2.875	…
	(1.76)	(1.21)	(1.60)	(1.25)	(1.59)	(1.25)	
$\Delta GRANT_{it}$	-0.002 *	-1.200 ***	-0.002	-1.198 ***	-0.002	-1.198 ***	…
	(-0.45)	(-2.96)	(-0.41)	(-2.95)	(-0.41)	(-2.95)	
$\Delta YOUNG_{it-1}$	-1.179	-215.081	-1.561	-226.421	-1.584	-226.291	…
	(-0.39)	(-0.85)	(-0.52)	(-0.90)	(-0.52)	(-0.90)	
ΔOLD_{it-1}	4.525	497.450 *	4.025	471.464 *	4.008	471.481 *	…
	(1.40)	(1.83)	(1.25)	(1.75)	(1.25)	(1.75)	
$\Delta UNEMPL_{it-1}$	-2.332	-13.056	-2.179	1.868	-2.181	1.883	…
	(-1.51)	(-0.10)	(-1.42)	(0.01)	(-1.42)	(0.01)	
ΔPOP_{it-1}	8.63E^{-05}	-0.001	8.60E^{-05}	-0.001	8.57E^{-05}	-0.001	…
		(-0.85)	(1.28)	(-0.13)	(1.27)	(-0.13)	
$FRAG_{it-1}$							
$NPAR_{it-1}$	-0.083	-2.627	-	-	-	-	…
	(-1.18)	(-0.46)					
$NPAR^{2}_{it-1}$	0.016	0.850	-	-	-	-	…
	(0.93)	(0.61)					
$ENPAR_{it-1}$	-	-	-0.011	2.305	0.001	2.211	…
			(-0.54)	(1.35)	(0.01)	(0.29)	
$ENPAR^{2}_{it-1}$	-	-	-	-	-0.003	0.026	…
					(-0.14)	(0.01)	
$TWOPAR_{it-1}$	-	-	-	-	-	-	…
$LARGEPAR_{it-1}$	-	-	-	-	-	-	…
Y_{1994}	0.210 ***	17.280	0.208 ***	16.810 ***	0.208 ***	16.811 ***	…
	(4.97)	(4.84)	(4.93)	(4.73)	(4.92)	(4.72)	
Y_{2000}	0.231 ***	17.847 ***	0.227 ***	17.199 ***	0.227 ***	17.204 ***	…
	(6.11)	(5.43)	(5.99)	(5.24)	(5.97)	(5.22)	
Intercept	-0.313	-19.569	-0.351 *	-26.953 ***	-0.360 *	-26.861 *	…
	(-1.63)	(-1.54)	(-1.83)	(-2.95)	(-1.77)	(-1.94)	
R^2	0.124	0.073	0.122	0.075	0.122	0.075	…
Adjusted R^2	0.103	0.051	0.102	0.054	0.101	0.053	…
Wald F-test (p)	206.371 (p<0.01)		205.914 (p<0.01)		205.939 (p<0.01)		…

Table A16 SUR estimation results of the tax rate change functions employing different fragmentation operationalisations (continued)

Dependent variable	…	(7) $\Delta LITR_{it}$	(8) $\Delta LPTR_{it}$	(9) $\Delta LITR_{it}$	(10) $\Delta LPTR_{it}$
V^{f}_{it}	…	0.004 **	0.087	0.003 **	-
		(2.54)	(0.80)	(2.09)	
$V^{f}_{it}{}^{c} * ICG_{it-1}{}^{c}$	…	-0.005 **	-0.173	-0.004 *	-
		(-2.33)	(-0.93)	(-1.95)	
ICG_{it-1}	…	0.010	1.243	0.017	-
		(0.47)	(0.71)	(0.92)	
$BALANCE_{it-1}$	…	-0.001 **	-0.011	-0.001 *	-
		(-2.24)	(-0.57)	(-1.90)	
$DEBT_{it-1}$	…	-3.91E-05	0.001	-	-
		(-1.12)	(0.36)		
$LITR_{it-1}$	…	-0.019	-	-0.023 *	-
		(-1.33)		(-1.70)	
$LPTR_{it-1}$	…	-	-0.008 **	-	-0.009 **
			(-2.15)		(-2.45)
$\Delta TBASE_{it-1}$	…	0.044 *	2.814	-	-
		(1.70)	(1.22)		
$\Delta GRANT_{it}$	…	-0.002	-1.196 ***	-	-1.190 ***
		(-0.44)	(-2.95)		(-3.04)
$\Delta YOUNG_{it-1}$	…	-1.267	-215.881	-	-
		(-0.42)	(-0.85)		
ΔOLD_{it-1}	…	4.231	482.029 *	-	510.221 **
		(1.31)	(1.79)		(2.20)
$\Delta UNEMPL_{it-1}$	…	-2.278	-9.813	-	-
		(-1.48)	(-0.08)		
ΔPOP_{it-1}	…	8.80E-05	-0.001	1.40E-04 **	-
		(1.31)	(-0.19)	(2.26)	
$FRAG_{it-1}$					
$NPAR_{it-1}$	…	-	-	-	-
$NPAR^{2}_{it-1}$	…	-	-	-	-
$ENPAR_{it-1}$	…	-	-	-	-
$ENPAR^{2}_{it-1}$	…	-	-	-	-
$TWOPAR_{it-1}$	…	-0.024	0.197	-	-
		(-0.94)	(0.09)		
$LARGEPAR_{it-1}$	…	-0.052	1.557	-	-
		(-1.25)	(0.45)		
Y_{1994}	…	0.207 ***	17.117 ***	0.154 ***	17.556
		(4.91)	(4.80)	(5.55)	(5.53)
Y_{2000}	…	0.229 ***	17.744 ***	0.187 ***	17.074
		(6.06)	(5.40)	(7.05)	(6.28)
Intercept	…	-0.369 **	-21.422 *	-0.276	-7.554
		(-1.97)	(-1.89)	(-1.64)	(-1.771)
R^2	…	0.124	0.073	0.114	0.065
Adjusted R^2	…	0.102	0.051	0.103	0.058
Wald F-test (p)	…	205.828 (p<0.01)		187.954 (p<0.01)	

Table A17 SUR estimation results of the tax rate change functions employing different ideological variables

Dependent variable	(1) $\Delta LITR_{it}$	(2) $\Delta LPTR_{it}$	(3) $\Delta LITR_{it}$	(4) $\Delta LPTR_{it}$	(5) $\Delta LITR_{it}$	(6) $\Delta LPTR_{it}$	(7) $\Delta LITR_{it}$	(8) $\Delta LPTR_{it}$
V^{f}_{it}	0.002	0.061	*0.001*	-	0.002	0.005	*0.001*	-
	(1.48)	(0.53)	*(1.03)*		(1.14)	(0.04)	*(0.84)*	
V^{f}_{it} * $LEFTMAJ_{it-1}$	0.007 **	0.120	0.007 **	-	-	-	-	-
	(1.97)	(0.41)	(1.97)					
$LEFTMAJ_{it-1}$	-0.380 *	-6.940	-0.380 *	-	-	-	-	-
	(-1.89)	(-0.41)	(-1.95)					
V^{f}_{it} * $LEFTGOV_{it-1}$	-	-	-	-	0.007 **	0.301	0.006 **	-
					(2.25)	(1.22)	(2.08)	
$LEFTGOV_{it-1}$	-	-	-	-	-0.381 **	-18.666	-0.351 **	-
					(-2.25)	(-1.32)	(-2.15)	
$BALANCE_{it-1}$	-0.001 **	-0.010	-0.001 **	-	-0.001 **	-0.010	-0.001 *	-
	(-2.23)	(-0.53)	(-1.88)		(-2.16)	(-0.54)	(-1.91)	
$DEBT_{it-1}$	-3.95E-05	0.001	-	-	-3.59E-05	0.001	-	-
	(-1.13)	(0.32)			(-1.03)	(0.43)		
$LITR_{it-1}$	-0.022	-	-0.025 **	-	-0.020	-	-0.024 *	-
	(-1.55)		(-1.88)		(-1.45)		(-1.75)	
$LPTR_{it-1}$	-	-0.008 **	-	-0.009 **	-	-0.008 **	-	-0.009 **
		(-2.24)		(-2.46)		(-2.15)		(-2.45)
$\Delta TBASE_{it-1}$	0.043 *	3.038	-	-	0.040	2.839	-	-
	(1.67)	(1.33)			(1.58)	(1.23)		
$\Delta GRANT_{it}$	-0.002	-1.192 ***	-	-1.184 ***	-0.002	-1.192 ***	-	-1.192 ***
	(-0.47)	(-2.93)		(-3.03)	(-0.44)	(-2.94)		(-3.04)
$\Delta YOUNG_{it-1}$	-1.310	-229.043	-	-	-1.367	-222.958	-	-
	(-0.43)	(-0.90)			(-0.45)	(-0.88)		
ΔOLD_{it-1}	4.173	472.308 *	-	508.193 **	4.034	476.434 *	-	511.28 ***
	(1.30)	(1.75)		(2.19)	(1.26)	(1.77)		9
								(2.21)
$\Delta UNEMPL_{it-1}$	-2.182	-3.202	-	-	-2.312	-11.856	-	-
	(-1.42)	(-0.025)			(-1.50)	(-0.09)		
ΔPOP_{it-1}	9.25E-05	-0.001	14.00E-05 **	-	9.61E-05	-0.001	14.50E-05 **	-
	(1.37)	(-0.090)	(2.25)		(1.44)	(-0.14)	(2.34)	
$NPAR_{it-1}$	-0.021	0.447	-	-	-0.019	1.042	-	-
	(1.24)	(0.31)			(-0.95)	(0.62)		
Y_{1994}	0.206 ***	16.907 ***	0.152	17.515 ***	0.206 ***	17.041 ***	0.154 ***	17.567 ***
	(4.83)	(4.76)	(5.47)	(5.52)	(4.88)	(4.80)	(5.53)	(6.28)
Y_{2000}	0.228 ***	17.982 ***	0.188 ***	17.046 ***	0.228 ***	17.835 ***	0.191 ***	17.078 ***
	(6.11)	(5.58)	(7.15)	(6.27)	(6.12)	(5.53)	(7.26)	(6.28)
Intercept	-0.201	-14.133 *	-0.103	-7.524 *	-0.187	-12.039	-0.101	-7.585 *
	(-1.26)	(-1.78)	(-0.74)	(-1.77)	(-1.17)	(-1.49)	(-0.72)	(-1.78)
R^2	0.120	0.071	0.111	0.065	0.122	0.073	0.113	0.065
Adjusted R^2	0.101	0.050	0.100	0.058	0.102	0.053	0.103	0.058
Wald F test (p-value)	201.72 (p<0.01)		186.05 (p<0.01)		204.36 (p<0.01)		187.54 (p<0.01)	

Table A18 Summary statistics and data sources

	Mean	Min.	Max.	Std. Dev.	Source
Degree of foresight of collected taxes ($DFCT_{it}$)	1.05	0.26	2.87	0.21	Dexia, AHA
Percentage of tax revenues in total revenues ($TAXP_{it}$)	7.56	0.75	37.64	4.78	Own calcul. on AHA
Number of taxes ($TAXN_{it}$)	15.09	2.00	46.00	7.26	AHA
Fiscal deficit as a share of total revenues (DEF_{it-1})	6.63	-20.15	41.06	7.78	Own calcul. on AHA
Number of inhabitants (POP_{it})	20.53	0.96	465.78	34.45	FPS Economy
Percental change of the number of inhabitants ($POPGR_{it}$)	0.44	-3.22	3.53	0.62	FPS Economy
Percental change of the number of firms ($FIRMGR_{it}$)	1.18	-71.16	12.61	2.62	FPS Economy
Number of government parties ($NPAR_{it}$)	1.73	1.00	5.00	0.71	MICE, VUB

Table A19 Distribution of DFCT over municipalities and time

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Mean	0.99	0.92	1.04	1.05	1.05	1.06	1.07	1.06	1.09	1.10	1.11
Std. Dev.	0.14	0.17	0.14	0.21	0.18	0.19	0.22	0.19	0.22	0.25	0.26
Min	0.27	0.26	0.64	0.61	0.74	0.61	0.57	0.53	0.79	0.58	0.67
Max	1.71	1.43	1.76	2.42	2.09	2.48	2.72	2.23	2.73	2.87	2.78
25%	0.94	0.85	0.98	0.96	0.97	0.97	0.97	0.98	0.99	0.98	0.98
Median	0.98	0.94	1.01	1.01	1.01	1.01	1.01	1.01	1.03	1.03	1.03
75%	1.03	1.01	1.01	1.07	1.01	1.11	1.07	1.06	1.11	1.12	1.13

Presentations at (inter)national conferences

Goeminne, S., Geys, B. & Smolders, C., Political Fragmentation and Projected Tax Revenues: Evidence from Flemish Municipalities, at

- International Tax & Public Finance Congress, Jeju, South Korea, August 2005
- VVE-dag, Brussels, Vrije Universiteit Brussel, Belgium, September 2005
- European Public Choice Society Conference, University of Turku, Finland, March 2006

Goeminne, S. & Smolders, C., Vote expectations and pre-electoral tariff cuts in Flemish municipalities, at

- World Meeting Of The Public Choice Societies, University of Amsterdam, The Netherlands, April 2007
- International Tax & Public Finance Congress, Warwick University, UK, August 2007
- INFER Public Economics Group Workshop on Public Economics and the Provision of Global Public Goods, National University of Ireland, Ireland, September 2007
- Labsi International Conference On Political Economy and Public Choice, Universita di Siena, Siena, Italy, September 2007
- (*Accepted for presentation on* INFER Annual Conference Loughborough University, Loughborough, UK, October 2007)
- XVth Public Economics Meeting, University Of Salamanca, Salamanca, Spain, February 2008

Goeminne, S. & Smolders, C., Determinants of local tax rates in Flemish municipalities, at

- WZB Economics and Politics Seminar Series, Wissenschaftszentrum Berlin für Sozialforschung, Berlin, Germany, December 2007

Goeminne, S. & Smolders, C., Strategic debt policy in Flemish municipalities, at

- (*Accepted for presentation on* Second Workshop Political Economy, Technische Universität Dresden, Dresden, Germany, November 2008)
- 16th Symposium on Public Economics, University of Granada, Granada, Spain, February 2009

This dissertation is about fiscal policy in Flemish municipalities in general and focuses on strategic policy in particular. As an introduction to local fiscal policy, we investigated the simultaneous role of partisan effects, of fragmentation, of interaction dynamics, of electoral cycles and of fiscal illusion effects on the Flemish local income tax rate and local property tax rate.

Even though policymakers' fiscal policy choices are assumed to bring about their re-election, policymakers may fail to achieve this aim. Aware of this failure, policymakers may change their policy from 'opportunistic' to 'strategic'. Policymakers expecting to lose power may pursue their fiscal policymaking to restrain their successors' scope of policymaking. Suchlike strategic behaviour, the focal point of this dissertation, is introduced and tested in Chapter 3. We use a vote function to estimate the governments' vote expectations and provide evidence that especially leftist and fragmented governments expecting to be defeated change debt to reduce the scope for policymaking of the next government.

Debt changes in election years thus can be explained by the government's vote expectations. One way to change debt is –ceteris paribus– changing tax rates. Indeed, in Chapter 4 we find a significant impact of the vote expectations on these changes. The lower the vote expectations, the stronger the local income tax rate cut. This is in line with expectations from strategic use of debt models. This effect cannot be retrieved for local property tax rate changes.

Finally, in chapter 5, we investigated whether fragmented governments are more optimistic about tax revenues. Overestimating tax revenues allows governments to spend more than the actual revenues allow for. This expectation can be inspired by the strategic use of debt. Overestimating tax revenues can be a strategic instrument for increasing debt when a government expects not to get into office again after the upcoming elections. Also the 'weak government hypothesis' and the 'war of attrition' may explain higher optimism in coalition governments. We show that the level of political fragmentation indeed affects the local government's revenue forecasting behaviour. Nonetheless, we find that coalitions with at least three parties are less optimistic.

Stijn Goeminne is research assistant at the Faculty of Business Administration & Public Administration of University College Ghent and is part of the Policy Research Centre on Budgetary & Tax Policy. His research focuses on local fiscal policy. He teaches financial management in the public sector.

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